Smart energy for all

Identifying audience characteristics that may
act as additional barriers to realising the
benefits of a smart meter

July 2015

SMART
ENERGY GB

hello

It is part of our culture to work with others – a commitment that is even more important when making plans to ensure that everyone in Great Britain feels confident and enthused to say yes to a smart meter.

In spring 2015 we published *Smart energy for all*, a consultation paper on identifying audience characteristics that may act as additional barriers to realising the benefits of a smart meter. We were fortunate to draw on a wealth of published information and insight gleaned through discussion with organisations that work with those audiences with the characteristics we discussed. This revised edition reflects the invaluable contributions made through this open consultation, which have helped refine the detail of our approach.

We are heartened that the organisations and individuals who work with our shared audiences have been generous with their views and knowledge. We would like to thank everyone who contributed to both the original *Smart energy for all* consultation and this updated edition.

Contents

Introduction
The purpose of this consultation

The national programme to modernise Great Britain's energy industry is long overdue. When it is completed, we will all have more control over the gas and electricity we use. It starts with the installation of new gas and electricity smart meters in our homes. Between now and 2020, every household in England, Scotland and Wales will be offered a smart meter.

Smart Energy GB is the national campaign for the smart meter rollout. It is our task to help everyone in Great Britain understand smart meters, the national rollout and how to use their new meters to get their gas and electricity under control.

Everyone can benefit from smart meter technology, so it is essential that no one gets left behind, regardless of who they are, where they live or what their personal circumstances are.

Inclusivity is vital to the success of the programme; this is reflected in the law that established Smart Energy GB and our responsibility to:

> "assist consumers with low incomes or prepayment meters, or consumers who may encounter additional barriers in being able to realise the benefits of Smart Metering Systems due to their particular circumstances or characteristics, to realise the benefits of Smart Metering Systems while continuing to maintain an adequate level of warmth and to meet their other energy needs." (Gas and Electricity Markets Authority, consolidated to 8 July 2015; Gas and Electricity Markets Authority, consolidated to 8 July 2015)

As the smart meter rollout accelerates, we must identify what these barriers might be. We need to know how they range in complexity and severity, and whether they are from an engagement or technical perspective. Some of the barriers will not be in our remit to overcome, but by recording them we can identify where further solutions are needed and play an active role where it is in our power to do so.

Great Britain is a diverse place, as can be seen in just a few examples: over one in ten of the population is over 65 (Office for National Statistics, September 2013. National Records of Scotland, March 2013): 900,000 speak little or no English (Office for National Statistics, August 2013. National Records of Scotland, September 2013): 17 per cent of adults in England have literacy levels at or below those expected of an 11-year-old (Department for Business Innovation & Skills, October 2013); more than half of Londoners live in flats (Office for National Statistics, April 2013); and 36 per cent of people rent their homes (Office for National Statistics, April 2013: National Records of Scotland, October 2014).

We need a robust and comprehensive approach that helps us to identify and understand the characteristics that may act as barriers to experiencing the benefits of smart meters. This will allow us to create the range of communications activities that mean we effectively engage with all of Great Britain.

To do this we use a four-stage process:

1. Identify a broad range of characteristics that can often cause barriers or challenges for people with those characteristics.

2. Within that list of characteristics, identify those that may cause additional barriers to the adoption and use of smart meters.

3. Determine which characteristics present the most definitive barriers to many or most people with that characteristic and which of those present barriers only when experienced in combination with others.

4. Where possible, build specific engagement plans to overcome barriers caused by that characteristic.

Smart energy for all shares our understanding on points one to three specifically, and in this updated edition, we have incorporated our conclusions from the consultation held in spring 2015.

Chapter 1
Smart meter implementation, and parties involved in its delivery

The government's vision is for every home to have smart gas and electricity meters by 2020. This illustrates our need to change our behaviour towards energy in Great Britain to secure an affordable and reliable energy supply and move towards a low carbon economy in the future. The scheme is projected to achieve a saving of £6.2 billion, which will be passed back to the consumer.

The new smart meter system is made up of a number of elements as shown here:
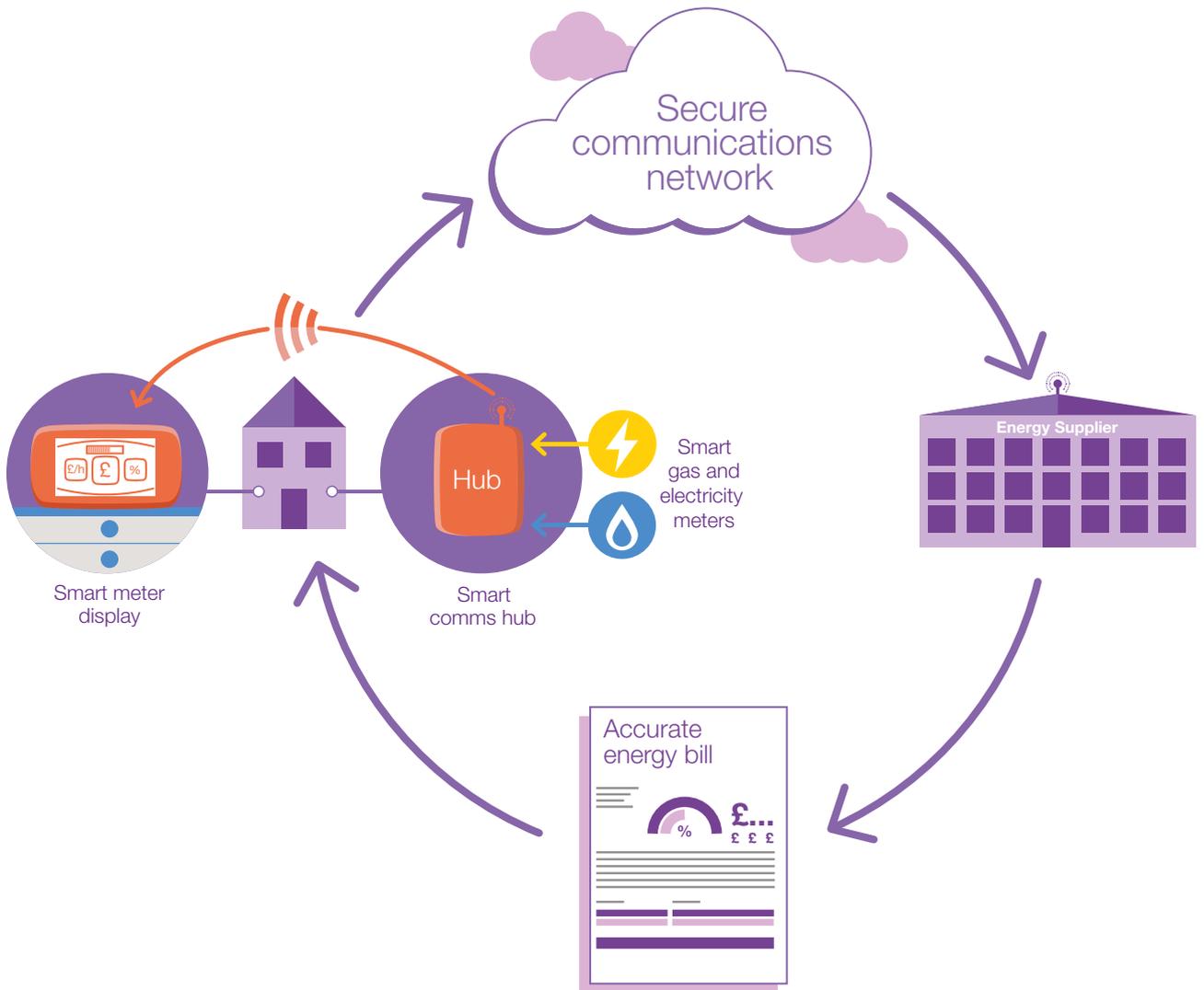

Figure 1
The new smart meter system.

In each household, the smart meter will replace the traditional meter. There is a smart comms hub alongside it, which (via the secure communications network) sends information to the gas and electricity supplier about usage. This means that when an energy bill is received, it is based on the same accurate information that consumers are able to monitor via their own smart meter display.

There are a number of organisations involved in the smart meter rollout. First, to explain our own role, Smart Energy GB (previously known as the Smart Meter Central Delivery Body) was set up in March 2013 as recommended in the Department of Energy & Climate Change in its *Consumer engagement strategy*. Our funding comes from contributions by the energy suppliers in line with their market share, and we are governed by a Board made up of directors nominated by the National Consumer Council (Citizens Advice), representatives of groups of consumers, and representatives of the small and large (domestic and non-domestic) gas and electricity suppliers.[1]

Smart Energy GB is the voice of the smart meter rollout. It is our task to help everyone in Great Britain understand smart meters, the national rollout and how to use their new meters to get their gas and electricity under control. Our specific licence objectives are:

1. Building consumer confidence in the installation of a Smart Metering System by gas and electricity suppliers.

2. Building consumer awareness and understanding of the use of Smart Metering Systems (and the information obtained through them).

3. Increasing the willingness of energy consumers to use Smart Metering Systems to change their behaviour so as to enable them to reduce their consumption of energy.

And, as mentioned in the introduction:

4. Assisting consumers with low incomes or prepayment meters, or consumers who may encounter additional barriers in being able to realise the benefits of Smart Metering Systems due to their particular circumstances or characteristics, to realise the benefits of Smart Metering Systems while continuing to maintain an adequate level of warmth and to meet their other energy needs (Gas and Electricity Markets Authority, consolidated to 8 July 2015; Gas and Electricity Markets Authority, consolidated to 8 July 2015).

We are delivering a consumer engagement campaign across mass media channels including TV, radio, out of home (OOH), press and digital. The campaign will build across the rollout timeline – messaging content, format, and media mix are planned to reach and engage households across Great Britain. The consumer engagement campaign may include channels or messages to specifically address the barriers related to characteristics identified in this paper.

Our role does not include having one-on-one relationships with consumers and as such we do not envisage using individually identifiable data.

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[1] Visit smartenergyGB.org for further information about Smart Energy GB and our role in the rollout.

Energy suppliers are a key part of the rollout – they are responsible for the installation of smart meters in the homes of their customers. Households will be offered a smart meter by their electricity and gas suppliers and contacted by them to arrange an appointment for installation. Suppliers and installers are bound by the Smart Metering Installation Code of Practice (SMICoP), which sets out standards and provisions covering all aspects of the smart meter installation. The purpose of the code is described as:

> "The Smart Metering Installation Code of Practice specifies the minimum standards for Members to follow in relation to the Customer facing aspects of the installation of Smart Metering Systems. The aim of the Code is for the Customer experience of the installation process to be positive, to protect Customers during the process, for Customers to be given appropriate assurances over what will take place during the installation process, and to deliver Programme benefits, including long term behavioural changes **(SMICoP, February 2015)**."

We are working with gas and electricity suppliers to make sure that consumers can successfully engage with, and progress through, the smart meter journey (the process from hearing about smart meters through to using them, which all consumers will experience). Importantly, there is a joint responsibility between ourselves and energy suppliers for ensuring that consumers can use the smart meter and realise its benefits. The smart meter journey and the roles of the individual organisations involved are shown below:

01 Hearing about smart meters → 02 Making a decision to say yes to a smart meter → 03 Being contacted about installation and setting it up → 04 Having the smart meter installed → 05 Using and benefiting from the smart meter

● Predominantly Smart Energy GB   ● Energy suppliers (Smart Energy GB is not responsible for installation)   ● Smart Energy GB and energy suppliers
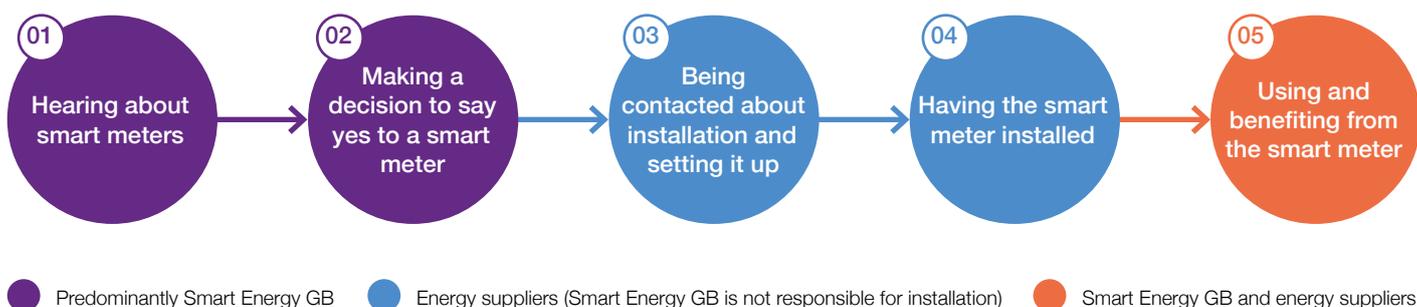
Figure 2
The smart meter journey.

Chapter 2
The benefits of smart meters

As well as the huge benefits to society, smart meters deliver important benefits to individuals. The overriding benefit is that we will all have greater control of our energy through very real changes to the way we buy and use gas and electricity.
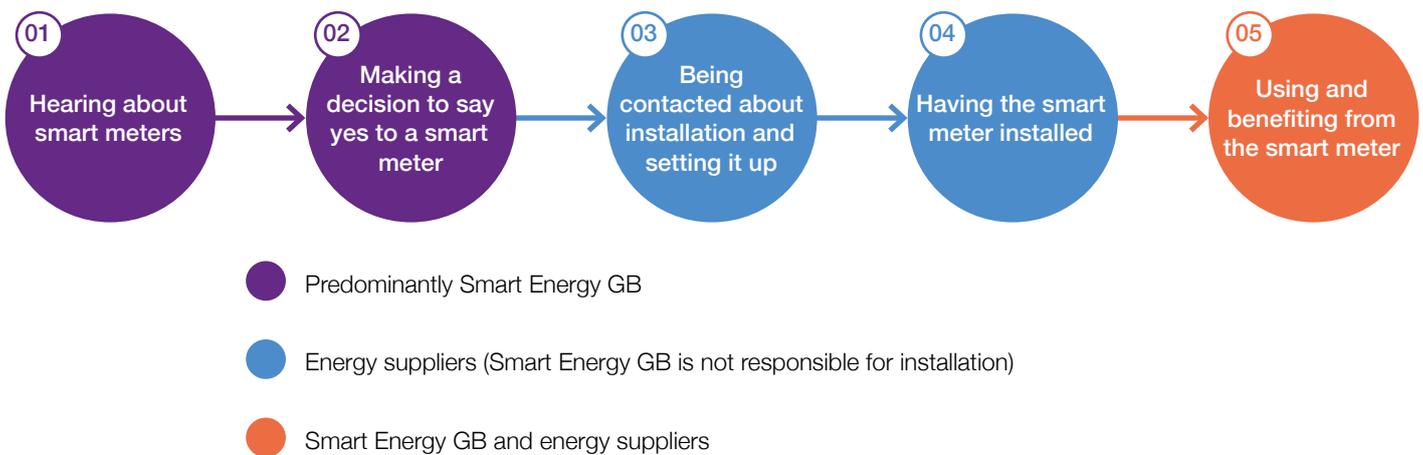
The tangible benefits are that:

• consumers can see the cost of their gas and electricity usage in pounds and pence, and in near real-time. This gives them a completely new level of control over their energy usage

• energy suppliers receive regular and accurate meter readings, putting an end to estimated bills and enabling them to see when the power is cut off

• prepay top-up will be as easy as pay-as-you-go and there will be a number of different payment options, including via mobile phone

• consumers can confidently switch between suppliers and tariffs (including prepay and pay-as-you-go). They can use their accurate energy consumption data to find the best deal for their circumstances

Additionally, smart meters lay the foundations for energy innovation in the future – including the technology to enable the mass adoption of electric cars, and smart-enabled appliances that are designed to use energy more efficiently.

Chapter 3
The smart meter journey

As shown in Figure 2 and below, there are five stages involved in the smart meter journey.

01	02	03	04	05
Hearing about smart meters	Making a decision to say yes to a smart meter	Being contacted about installation and setting it up	Having the smart meter installed	Using and benefiting from the smart meter

● Predominantly Smart Energy GB

● Energy suppliers (Smart Energy GB is not responsible for installation)

● Smart Energy GB and energy suppliers

To identify the characteristics that may present obstacles along this journey, we have taken a detailed look at what happens in each stage to see where difficulties might arise. Here are the stages of the journey and examples of what associated barriers may occur:

Stage 1: hearing about smart meters

Consumers will need to have heard, seen or read about the smart meter rollout through one of the engagement channels (as mentioned in Chapter 1). The first stage is knowing that the smart meter rollout is here and having a general awareness of what that means.

Potential obstacle: the message doesn't reach them.

Some audience characteristics mean that they are less likely to see, hear, read or engage with mass engagement channels.

Stage 2: making the decision to say yes to a smart meter

For consumers to say yes to a smart meter they will need to understand what a smart meter is and recognise the benefits it can bring to their life.

Potential obstacles: the message isn't adequately understood; the message doesn't resonate with them.

Some audiences may not immediately understand what smart meters are or why they should have one. They may think that smart meters do not apply to them or that they are less useful in their own domestic situation, or they might believe that they will not know how to use one after installation.

Stage 3: being contacted about installation and setting it up

All consumers will be contacted by their energy supplier and offered a smart meter installation. Consumers can also call to request one from their supplier. It is then up to the supplier and the consumer together to arrange a convenient time to have the smart meter fitted (gas and electricity meters are fitted separately unless the consumer is a dual fuel customer with one supplier). The installer will need to ensure that the consumer knows what will happen at installation and what they will need to do to prepare, e.g. clearing access to the meters, being in, and being able to give the installer access when they arrive.

Potential obstacles: difficulty arranging the appointment with their supplier; difficulty preparing for installation.

Some consumers may find it difficult to arrange an appointment because they lack access to the internet or a phone; they are extremely time poor or cannot take time off work, or because a language barrier, disability or impairment challenges their ability to make an appointment. They may also find preparing for installation day a challenge, either practically or emotionally.

Stage 4: having the smart meter installed

The installer will remove the traditional meter and fit the new smart meter; this means briefly interrupting the energy supply. The installer will talk the consumer through what they have done, explain how the smart meter works, how to use the smart meter display, how their own behaviour will affect their usage, and that money spent on energy is shown on the meter.

Potential obstacle: difficulty on installation day.

Some customers may have characteristics that make them less comfortable having the installer in their home, or characteristics that mean they less readily understand what has been installed. The installation may need to be adapted to meet their specific needs or they may need a specialist smart meter display. This could change or prolong the installation journey for them.

Stage 5: using and benefiting from the smart meter

Once installed, consumers will need to keep the smart meter display somewhere visible. The display allows them to see how using appliances affects their energy consumption and how much it costs. They will be able to control their energy usage and use the data to switch their tariff or supplier for a better deal. Consumers will also be able to choose prepay to suit their circumstances.

Potential obstacles: difficulty using the smart meter display; difficulty understanding the information provided on the smart meter display; difficulty using the information to take active control of their energy use; difficulty choosing the right deal or supplier for them.

Some consumers may have difficulty using the smart meter display. They may struggle with the buttons, seeing the data, or understanding it. Some may not be able to make changes to their energy because their property is cold and inefficient, or because they are already unable to maintain an adequate level of warmth in their homes whilst meeting their other energy needs. Also, they may be less able to use the data to help them switch supplier because they have difficulty speaking to suppliers, or find comparing tariffs and charges challenging or overwhelming.

Chapter 4
Starting with a universal range of characteristics likely to present barriers

The smart meter rollout is unlike any other major infrastructure change we've seen in Great Britain. Rather than being delivered universally region by region, the type of property will be the main influence on when and where a smart meter will be installed. We can learn from previous mass engagement campaigns and other large-scale infrastructure changes, but we should not rely on their definition of audience characteristics that are likely to present barriers.

We have gathered information from a wide range of sources that relate to the audience characteristics that are likely to cause barriers to the realisation of the benefits of smart meters (a full bibliography and list of sources begins on page 25). To make sure that we have up-to-date information, most of these sources are from 2010 or more recent. They are also mostly Great Britain or nation-specific but where this is not possible we have used a UK-specific source.

Our sources include (but are not limited to):

- government reports and consultations

- regulators and codes of conduct

- expert organisations (representing audiences and issues related to the task)

- previous campaigns working with harder to reach or vulnerable audiences

The Priority Services Register (PSR) requirements for energy providers, as regulated by Ofgem, has also been reviewed. It states that:

"The current Priority Service arrangements require suppliers and electricity Distribution Network Operators (DNOs) but not Gas Distribution Networks (GDNs) to keep registers of disabled and chronically sick customers and customers of pensionable age. Suppliers must share information about customers on their register with GDNs and information about customers who need advance notice of interruptions with DNOs.

Companies have to provide specified non-financial services to customers who are […] of pensionable age, disabled, chronically sick, deaf, hearing impaired, blind or partially sighted (Ofgem, June 2014).'

And Ofgem's own definition, as taken from their *Consumer Vulnerability Strategy*, is:

"We have defined vulnerability as when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where he or she is:

- significantly less able than a typical consumer to protect or represent his or her interests in the energy market; and/or

- significantly more likely than a typical consumer to suffer detriment, or that detriment is likely to be more substantial Ofgem, *Consumer Vulnerability Strategy*, July 2013)."

We will be keeping abreast of the work that Ofgem and the Energy Networks Association (ENA) are doing in relation to the PSR and will incorporate their thinking on needs based vulnerabilities where appropriate.

SMICoP makes reference to customers in need of extra engagement support. It categorises them as who "for reasons of age, health, disability or severe financial insecurity […] are unable to safeguard their personal welfare or the personal welfare of other members of their household". It makes specific mention of"

"groups with specific needs – such as the visually impaired, hearing impaired, and those with low levels of literacy; vulnerable customers," and those with 'specific cultural traditions or religious beliefs (SMICoP, February 2015)'." SMICoP also emphasises the requirement for all installers to use and add appropriate customers to the PSR.

Although these are useful definitions, the smart meter rollout, and our role within it, is distinct from that which the PSR is designed for. Therefore we need a framework that better matches the requirements set out in our licence objectives.

We have defined a long-list of characteristics based on all of our sources and we have broadened the characteristics to include more information about the audiences that display them. Sources for this include Target Group Index™ [2], TouchPoints 2014[3] and the 2011 Census. The definitions we have created include:

- demographic (socio-economic factors) – age, location, household income, type of employment

- prevalence of characteristics in GB's population – how many people there are with this characteristic

- media consumption – what paid media channels they read, watch or listen to

- who or what that audience is supported or influenced by – what is going on in the wider world of this audience with these characteristics

[2] Target Group Index is the largest single source of marketing and media surveys in Great Britain and was established by BMRB in 1969. The TGI survey has a sample of 25,000 and is conducted quarterly.

[3] TouchPoints from the Institute of Practitioners in Advertising provides context and perspective into people's lives and insights on their media usage.

We interrogated these definitions through a series of stakeholder consultation events, undertaken as part of our ongoing consultation with organisations and experts. These workshops were facilitated by research and engagement agency, BritainThinks. They took place at five locations (Glasgow, Newcastle, Cardiff, Exeter and London) and included 100 contributors from a wide range of organisations.[4]

We asked participants at these events to consider the long-list of characteristics identified, to suggest other characteristics for consideration, and highlight characteristics that should be sub-divided or discounted. They were also asked to consider the smart meter journey and give feedback on where they thought those characteristics could present barriers.

The stakeholder consultation events identified a small number of new characteristics, as did the *Smart energy for all* consultation in spring 2015. These have been added to those originally identified in the long-list of characteristics below.

It is important to say that many characteristics are interlinked (through causality or multiple deprivation). However, for the purpose of this exercise all characteristics have been kept distinct. The characteristics are represented against Ofgem's framework of characteristics, capacity and circumstances.
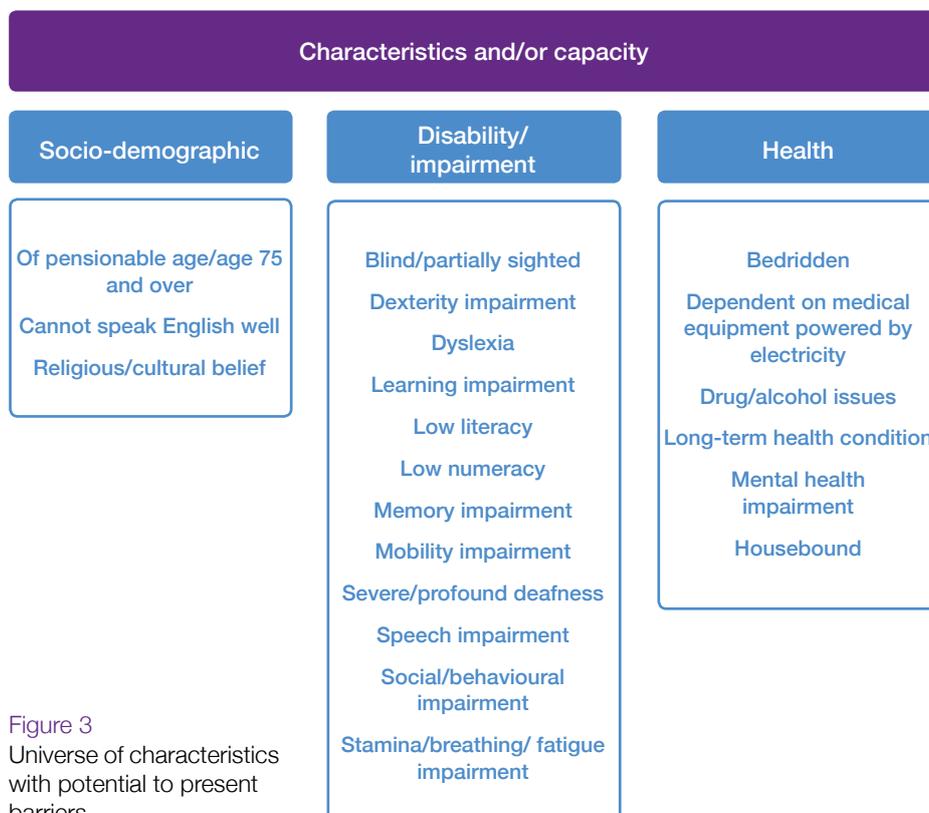
Characteristics and/or capacity

Socio-demographic

Of pensionable age/age 75 and over

Cannot speak English well

Religious/cultural belief

Disability/ impairment

Blind/partially sighted

Dexterity impairment

Dyslexia

Learning impairment

Low literacy

Low numeracy

Memory impairment

Mobility impairment

Severe/profound deafness

Speech impairment

Social/behavioural impairment

Stamina/breathing/ fatigue impairment

Health

Bedridden

Dependent on medical equipment powered by electricity

Drug/alcohol issues

Long-term health condition

Mental health impairment

Housebound

Figure 3
Universe of characteristics with potential to present barriers.

[4] Full list of contributors can be found in the BritainThinks report, a link to which is in the further reading section of this paper.
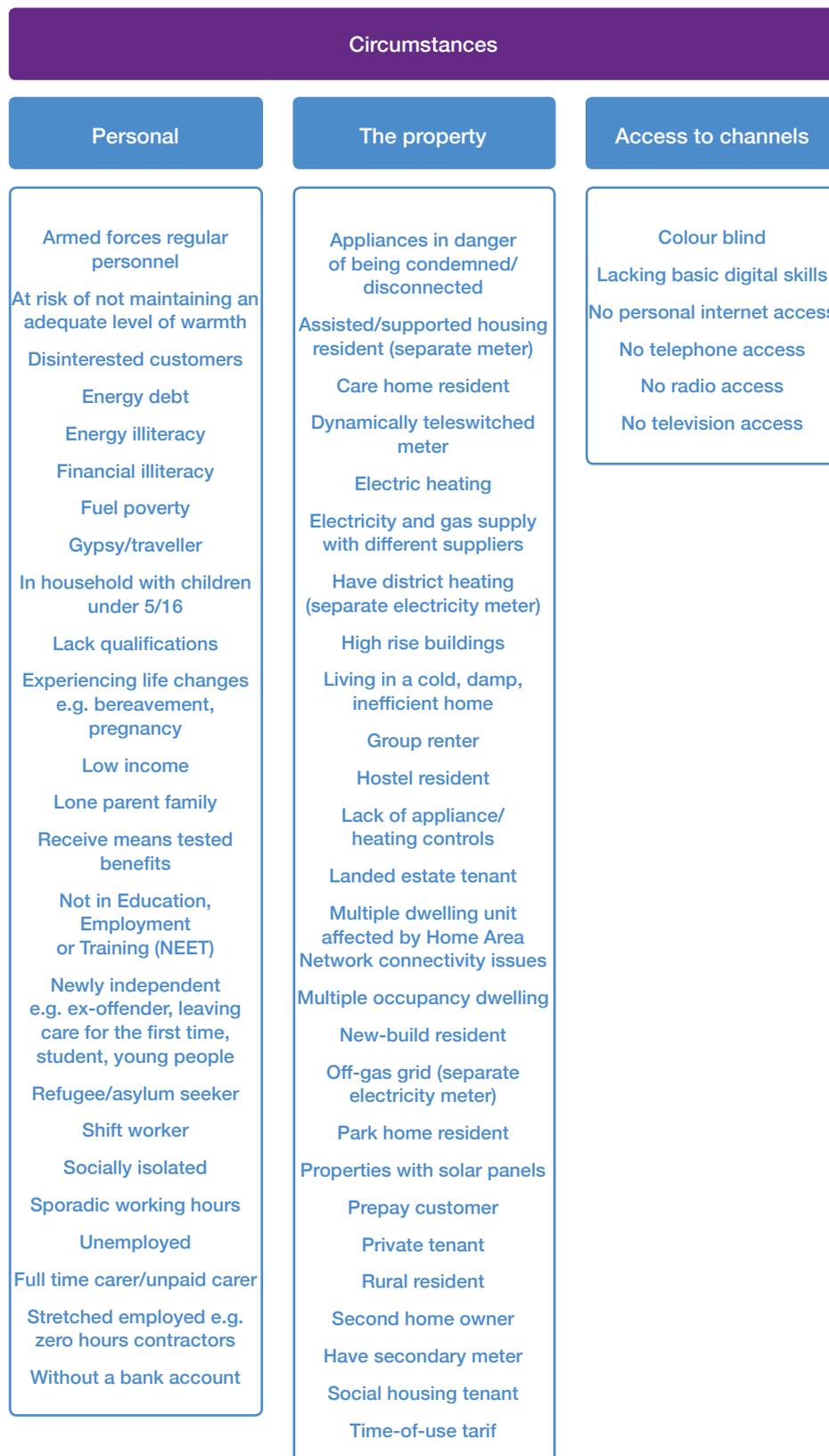
Circumstances		
Personal	**The property**	**Access to channels**
Armed forces regular personnel	Appliances in danger of being condemned/ disconnected	Colour blind
At risk of not maintaining an adequate level of warmth	Assisted/supported housing resident (separate meter)	Lacking basic digital skills
Disinterested customers	Care home resident	No personal internet access
Energy debt	Dynamically teleswitched meter	No telephone access
Energy illiteracy	Electric heating	No radio access
Financial illiteracy	Electricity and gas supply with different suppliers	No television access
Fuel poverty	Have district heating (separate electricity meter)	
Gypsy/traveller	High rise buildings	
In household with children under 5/16	Living in a cold, damp, inefficient home	
Lack qualifications	Group renter	
Experiencing life changes e.g. bereavement, pregnancy	Hostel resident	
Low income	Lack of appliance/ heating controls	
Lone parent family	Landed estate tenant	
Receive means tested benefits	Multiple dwelling unit affected by Home Area Network connectivity issues	
Not in Education, Employment or Training (NEET)	Multiple occupancy dwelling	
Newly independent e.g. ex-offender, leaving care for the first time, student, young people	New-build resident	
Refugee/asylum seeker	Off-gas grid (separate electricity meter)	
Shift worker	Park home resident	
Socially isolated	Properties with solar panels	
Sporadic working hours	Prepay customer	
Unemployed	Private tenant	
Full time carer/unpaid carer	Rural resident	
Stretched employed e.g. zero hours contractors	Second home owner	
Without a bank account	Have secondary meter	
	Social housing tenant	
	Time-of-use tarif	

Figure 3
Universe of characteristics with
potential to present barriers.

Chapter 5
Determining which characteristics are particularly relevant to the smart meter journey

Next, we reviewed the long-list of characteristics for relevance and duplication. To do this we gained insight from the stakeholder consultation events, from desk research and audience insight subscription sources.

Relevance: Is there at least one stage in the smart meter journey where this specific characteristic could cause an obstacle?

Duplication: Is this characteristic unique, or is it a subset of, or the same as another characteristic?

This table shows how the duplication and relevance reappraisal works against a selection of the long-list of characteristics and the judgements that were made as a result. Please note that the duplication and relevance process provides a framework for inclusion rather than excluding certain characteristics. Plus it identifies where characteristics are already being catered for in the engagement plan.

Characteristic	Definition	Relevance Is there at least one stage in the smart meter journey where this specific characteristic could cause an obstacle?	Duplication Is this characteristic unique or is it a subset of or the same as another characteristic?
Shift worker	No legal definition. A work activity scheduled outside standard daytime hours, where there may be a handover of duty from one individual or work group to another; a pattern of work where one employee replaces another on the same job within 24 hours (Health and Safety Executive). Examples include essential public services - hospitals, police, fire brigade, utilities. Routine and manual workers - supermarkets, petrol stations and call centres.	No - same mainstream message delivered regarding time off for installation.	Potential duplication with low income characteristics in the case of manual workers.
Second home owner	A privately owned, habitable accommodation that is not being occupied by anyone as their main residence. It may be occupied occasionally, for example as a holiday home, or when working away from the householder's main home (Department for Communities and Local Government).	No - the journey would be the same as for the main property.	No
Without a bank account	No accounts (including Post Office card account). The Post Office card account is specifically for receiving pensions and other benefits.	No - this in itself does not present immediate obstacles to the journey.	Yes - high degrees of duplication with prepay meter as a characteristic.
Of pensionable age	State Pension age which can be between 61 and 68, depending when someone was born and if they're male or female (Gov.uk).	Yes - relevance and usage at all stages of the journey for some and likely to be more so with older end of the age group.	Yes - age 75 and over characteristic.
Lack qualifications	No academic or professional qualifications (Census).	Yes - may affect ability to understand smart meter messages if lack of qualifications is a result of/has led to low literacy and/or numeracy.	Yes - duplication with low literacy/low numeracy.

Figure 4
Examples of characteristics within the relevance and duplication process.

This process resulted in 23 particularly relevant characteristics that are a truer reflection of the characteristics that are likely to result in obstacles along the smart meter journey. They are highlighted in the chart below.
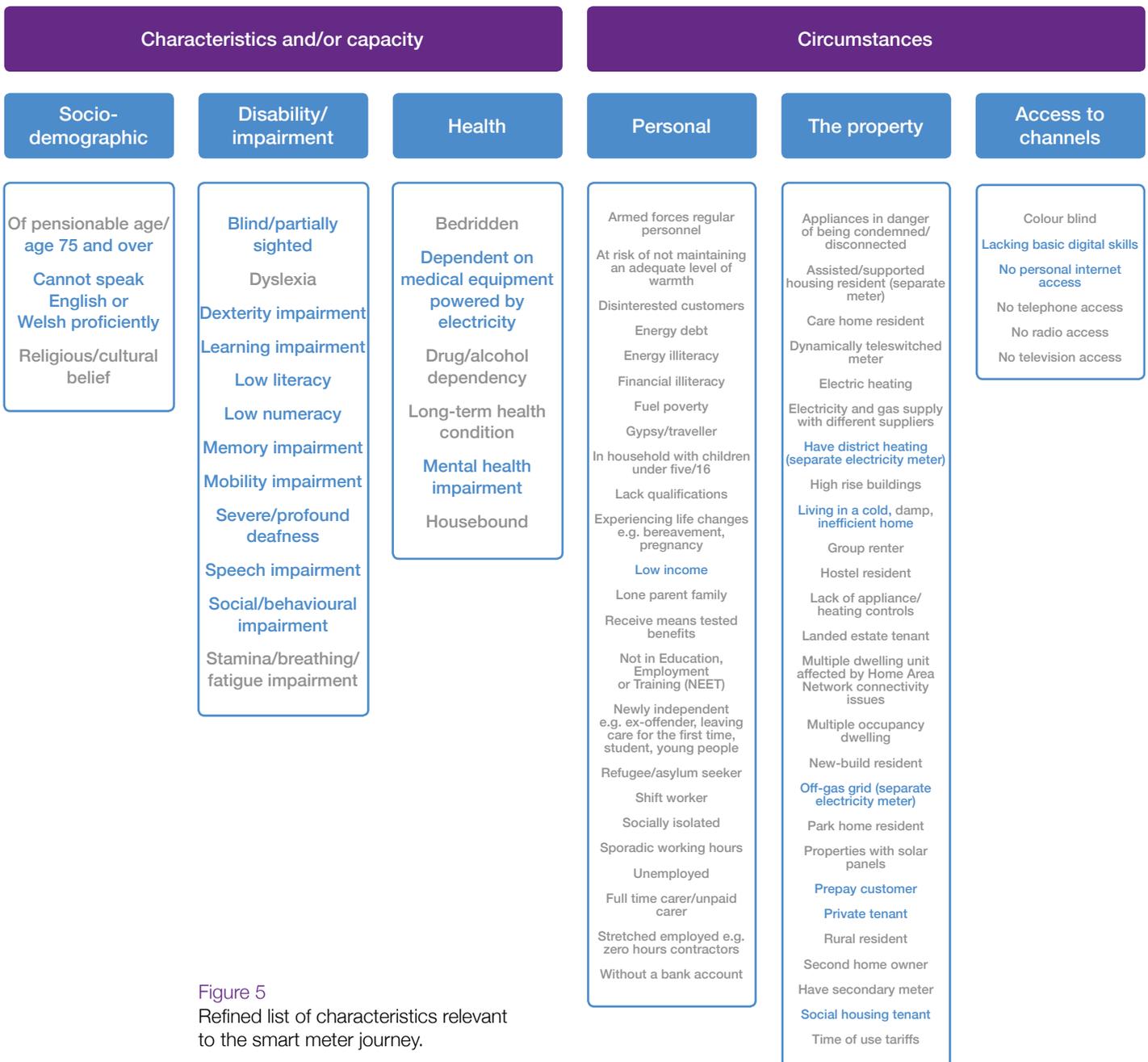
Characteristics and/or capacity			Circumstances		
Socio-demographic	Disability/impairment	Health	Personal	The property	Access to channels
Of pensionable age/age 75 and over Cannot speak English or Welsh proficiently Religious/cultural belief	Blind/partially sighted Dyslexia Dexterity impairment Learning impairment Low literacy Low numeracy Memory impairment Mobility impairment Severe/profound deafness Speech impairment Social/behavioural impairment Stamina/breathing/fatigue impairment	Bedridden Dependent on medical equipment powered by electricity Drug/alcohol dependency Long-term health condition Mental health impairment Housebound	Armed forces regular personnel At risk of not maintaining an adequate level of warmth Disinterested customers Energy debt Energy illiteracy Financial illiteracy Fuel poverty Gypsy/traveller In household with children under five/16 Lack qualifications Experiencing life changes e.g. bereavement, pregnancy Low income Lone parent family Receive means tested benefits Not in Education, Employment or Training (NEET) Newly independent e.g. ex-offender, leaving care for the first time, student, young people Refugee/asylum seeker Shift worker Socially isolated Sporadic working hours Unemployed Full time carer/unpaid carer Stretched employed e.g. zero hours contractors Without a bank account	Appliances in danger of being condemned/disconnected Assisted/supported housing resident (separate meter) Care home resident Dynamically teleswitched meter Electric heating Electricity and gas supply with different suppliers Have district heating (separate electricity meter) High rise buildings Living in a cold, damp, inefficient home Group renter Hostel resident Lack of appliance/heating controls Landed estate tenant Multiple dwelling unit affected by Home Area Network connectivity issues Multiple occupancy dwelling New-build resident Off-gas grid (separate electricity meter) Park home resident Properties with solar panels Prepay customer Private tenant Rural resident Second home owner Have secondary meter Social housing tenant Time of use tariffs	Colour blind Lacking basic digital skills No personal internet access No telephone access No radio access No television access

Figure 5
Refined list of characteristics relevant to the smart meter journey.

Here the 23 particularly relevant characteristics are listed with their definitions. The appendix includes an outline for each characteristic and how it could present a barrier(s) at the various stages along the smart meter journey.

Characteristic	Definition
Age 75 and above	Age 75 and above.
Blind or partially sighted	This includes people registered blind or partially sighted who have severe and irreversible sight loss (Royal National Institute of Blind People).
Cannot speak English or Welsh proficiently	Non-proficient; cannot speak English or cannot speak English well (or Welsh in Wales) (Census).
Dependent on medical equipment powered by electricity	Dependent on medical equipment powered by electricity, e.g. stair lift, electric wheelchair, defibrillator or dialysis machine. (No formal definition found. Examples provided by Energy UK).
Dexterity impairment	Severe impact on ability to carry out everyday activities such as gripping, holding and writing or limits movement in the shoulders (Office for National Statistics).
District heating (separate electricity meter)	No universally agreed definition for district heating. Either: • two or more distinct buildings connected to a single heat source or • one building in which there are more than 10 individual customers connected to a single heat source (Department of Energy & Climate Change).
Lacking basic digital skills	Lacking the skills to: • manage information, i.e. find, manage and store digital information and content • communicate, i.e. interact, collaborate, share and connect with others • transact, i.e. purchase and sell goods and services; organise finances and use digital government services • problem solve, i.e. increased independence and confidence by solving problems using digital tools and finding solutions using digital tools • create, i.e. engage with communities and create basic digital content in order to engage with digital communities and organisations (Go ON UK)
Learning impairment	Moderate to severe learning disability (IQ of 50 or below). Likely to have some language skills that mean they can communicate about day-to-day needs and wishes. Some people may need more support caring for themselves, but many will be able to carry out day-to-day tasks (British Institute of Learning Disabilities).
Living in a cold inefficient home	EPC rating F or below. This characteristic was identified by Ofgem, but no definition offered. DECC has proposed a minimum energy efficiency standard across the domestic private sector of EPC rating E or above, which we are using to define this characteristic. This means needing to spend on average £1,000 a year more on energy to heat their home compared to a typical home (Secretary of State)
Low income	Relative low income: individuals are defined as in low income, when the household in which they live has income less than 60per cent of the national median (Before Housing Costs, including rent, water rates, mortgage interest payments, buildings insurance payments and ground rent and service charges) (Department for Work and Pensions).
Low literacy	Literacy levels at level 1 or below, e.g. may not be able to identify the location of a named place in a short descriptive paragraph (Department for Business, Innovation & Skills).
Low numeracy	Numeracy skills at level 1 or below, e.g. may not be able to find the most popular holiday destination on a simple bar graph (Department for Business, Innovation & Skills).
Memory impairment	This includes dementia and associated symptoms, including mild cognitive impairment; problems with day-to-day memory, planning, language, attention and visuo-spatial skills, e.g. interpreting objects and shapes, (Alzheimer's Society)

Characteristic	Definition
Mental health impairment	Mental health issues that have a long-term effect on normal day-to-day activity. For example, using a computer, working set times or interacting with people (defined under the Equality Act 2010).
Mobility impairment	Severe impact on ability to carry out day-to-day activities such as sitting, standing or walking or climbing stairs (ONS).
No personal internet access	No personal access to the internet anywhere, both inside and out of the home. Including use via mobile devices (Ofcom).
Off-gas grid	Household not connected to the gas grid (DECC).
Prepay customer	Prepay gas or electricity meter, or both installed at the property.
Private tenant	Accommodation that is rented from a private landlord or letting agency, employer of a household member, relative or friend of a household member, or other non-social rented accommodation (Census).
Severe or profound deafness	Severe or profound deafness, e.g. the quietest sounds people with severe deafness can hear are 70 decibels, i.e. cannot hear normal conversation. May lip-read, have a hearing aid, or use sign language (Action on Hearing Loss).
Social housing tenant	Accommodation that is rented from a council or local authority, or from a registered social landlord, housing association, housing co-operative or charitable trust (Census).
Social/ behavioural impairment	Referenced in Department for Work and Pensions's Family Resources Survey, but without a definition. Examples include autism or other autistic spectrum conditions, attention deficit disorder, or Asperger's syndrome.
Speech impairment	The inability of a person to speak clearly at a normal pace and rhythm and to understand someone else speaking normally in their own language (Equality and Human Rights Commission).

Figure 6
Refined list of characteristics with definitions

Chapter 6
Identifying the characteristics most likely to present barriers

All the characteristics in Figure 5 are relevant to the smart meter journey, but it is clear from our complete journey mapping that there are different levels of relevance – some characteristics will cause obstacles at multiple parts of the journey, some will cause obstacles to only a few of the people that have that characteristic, and others will cause obstacles to many.

To identify which characteristics are most likely to present barriers, we have assessed whether 'many or most' people with each characteristic will encounter an obstacle because of that characteristic alone, or whether it is only when that characteristic is paired with another characteristic that difficulties are exacerbated and make encountering barriers more likely.

This is important to draw out so that we clearly understand the people that may encounter obstacles, and the specific reasons for that (we accept that individuals will often have a number of characteristics together). This has resulted in the characteristics being grouped like this:

Group A: characteristics that directly and solely cause an obstacle for many or most people with that characteristic.

Group B: characteristics that, when combined with any other characteristic in Group B or any in Group C, cause an obstacle for many or most people, but when experienced alone they do not.

Group C: characteristics that cause an obstacle for many or most only when combined with one or more characteristics in group B, but not when combined with another in Group C or when experienced alone.

If a characteristic from Group B or Group C is likely to present a barrier when grouped with one or more characteristics from Group A, then it has already been identified as such because Group A is definitive.

This grouping will help us to develop efficient solutions to overcome the obstacles created by the characteristics. We will use the process shown here:
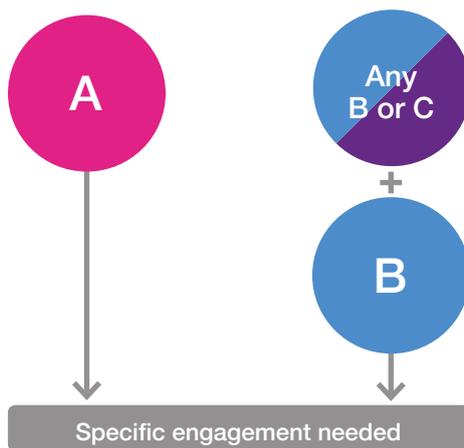
Figure 7
Characteristic grouping to identify need for specific engagement

The characteristics in Figure 6 are grouped as follows:

Group A

- blind or partially sighted
- cannot speak English proficiently (English or Welsh in Wales)
- dependent on medical equipment powered by electricity
- low literacy
- memory Impairment.
- mental health impairment

- separate electricity supply, including:
  - district heating
  - off-gas grid
- tenants, including:
  - private tenant
  - social housing tenant

Group B

- age 75 and above
- lacking basic digital skills
- low income

Group C

- dexterity impairment
- learning impairment
- living in a cold, inefficient home
- low numeracy
- mobility impairment
- no personal internet access
- prepay customer
- severe/profound deafness
- social/behavioural impairment
- speech impairment

Here are three examples to illustrate our thinking:

Example 1

Memory impairment is in Group A. This means that many or most of the audience will need specific engagement to realise the benefits of smart meters, and solutions will be designed for that audience.

Example 2

Aged 75 and over is in Group B. This means that the characteristic alone is not thought to present many or most people with a barrier. However, when this is coupled with low income (also Group B) or low numeracy (Group C), many or most people would start to encounter difficulties. So specific engagements would be designed for them.

Example 3

Speech impairment and no personal internet access are both in Group C. These may present significant challenges to some people with both characteristics. But the combination does not present a barrier to many or most people on the smart meter journey specifically unless combined with a characteristic from Group B, e.g. aged 75 and over.

Chapter 7
Supporting documents and further reading

The following resources and documents give some useful background to this paper. They provide more information about us (our role and progress), the Stakeholder Consultation Events facilitated by BritainThinks, and the latest consumer research about smart meter awareness, adoption and perception.

Smart Energy GB
smartenergyGB.org

Annual report 2014
Consumer engagement plan
Stakeholder consultation events 2014
Smart energy outlook, March 2015

These can be found at: smartenergyGB.org

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Glossary

Term	Description
Account holder	The person who holds the account with an energy supplier. The account holder will be the person responsible for confirming with the energy supplier the appointment to have a smart meter fitted to replace their traditional meter. The account holder is the person who pays the bill for any energy used.
Characteristic	Distinguishing qualities, attributes, or traits.
Consumer	The person(s) occupying the premises where the smart meter system is to be installed, or who is a responsible adult with suitable authority to allow access to the premises.
Data Communications Company	The communications infrastructure that underpins the entire smart meter system. This system enables delivery of data between all customers and all energy suppliers.
Department of Energy & Climate Change	The UK government department which is in charge of energy matters in the UK, as well as international climate change matters.
Distribution Network Operator	Distribution Network Operator (DNO) is the operator of an electricity distribution network. They are responsible for the delivery of electricity to the point of entry to a consumer premises.
Dual-fuel	Gas and electricity are provided by the same supplier.
Energy	In the context of smart meters, this refers to gas and electricity only.
Energy consumption	Energy consumption is the use of energy as a source of heat or power. Energy consumption is measured by a meter and account holders are billed for their usage.
Energy supplier	Supplier(s) licensed to supply gas and/or electricity.

Term	Description
Consumer engagement plan	Under its licence conditions, Smart Energy GB must produce and maintain a plan for achieving its objectives (the *Consumer engagement plan*), which describes the activities that it proposes to carry out to achieve them and how it's taken into account the need to coordinate its activities with those of other parties. The *Consumer engagement plan* is kept under review and appropriate amendments must be made so that it continues to be accurate, up to date and fit for purpose.
Fuel poverty	In England A household is considered fuel poor if their energy costs more than the national median level and, as a result, their leftover income leaves them below the poverty line. In Scotland and Wales A household is considered to be fuel poor if they spend more than 10 per cent of their income on fuel to maintain an adequate standard of warmth (usually defined as 21°C for the main living area, and 18°C for other occupied rooms).
Gas Distribution Network	Companies licensed to distribute gas in Great Britain by the Office of Gas and Electricity Markets.
Home Area Network	The elements of the smart meter system found in your home. These are the smart meter(s), smart comms hub and the smart meter display.
Home reference person	The oldest full-time worker in most households, or a person chosen from the household based on their age and economic activity.
Install	The fitting of a smart meter and smart comms hub into a home and the offer of a smart meter display.
Installer(s)	The energy supplier representative who will come to your home and replace the traditional meters with smart meters, then check that they work properly. They will also make sure that you understand how to use your new smart meter(s) and smart meter display.

Term	Description
Licence condition(s)	Under the Gas Act 1986 and the Electricity Act 1989, certain activities, i.e. generation, transmission, distribution and supply for both gas and electricity, may only be carried out with a licence (or under a relevant exemption or exception). All energy suppliers in Great Britain operate under Supply Licence Conditions (domestic and non-domestic consumers).
Microbusiness(es)	Part of Smart Energy GB's remit is to extend our consumer engagement activity to microbusinesses where it is deemed cost effective to do so. Microbusinesses are defined by gas and electricity supplier licences as using less than 100,000 kilowatt-hour electricity / 293,000 kWh gas per year, or who employ fewer than 10 people with a turnover of no more than €2 million.
National rollout	The installation of 53 million smart meters in 30 million properties across Great Britain by 2020.
Ofgem	Ofgem is the body responsible for protecting consumers who use energy in Great Britain. Ofgem regulates energy suppliers.
Prepay	A payment system whereby the consumer pre-purchases gas and/or electricity from a licensed retailer, then uses it as required. Under this tariff there are no monthly bills.
Priority Services Register	The standard licence conditions of the gas and electricity supply licences require suppliers to establish a list (the Priority Services Register) of domestic customers that are of pensionable age, disabled or chronically sick. Eligible customers can ask to be added to their supplier's list. These customers are then eligible for certain free services specified in the supply licences.
Secure communications network	The secure communications network is the infrastructure that will comprise a number of secure systems that ensure the overall security of data from a consumer's premises through to the service users (energy suppliers, network operators and other authorised third parties). Security consists of both technical controls, such as strong cryptographic protection of data and physical protection, and access controls.
Secure Home Area Network	The elements of the smart meter system found in your home. These are the smart meter(s), smart comms hub and the smart meter display.

Term	Description
Smart comms hub	A small piece of equipment installed in the home, which holds all information centrally and transmits this information wirelessly from your smart meter to your energy supplier, bringing benefits such as faster switching between suppliers.
Smart meter(s)	The next generation of energy meters with real time data to help us control the way in which we all buy and use gas and electricity.
Smart meter display(s)	A handheld digital device that sits in your home and allows you to see how much energy you are using as well as how much it's costing you in near real time.
Smart meter equipment	Refers to any of the equipment necessary to provide smart meter functionality to a consumer in their home.
Smart meter journey	The process from hearing about smart meters through to using them, which all consumers will experience.
Smart meter system	Describes as a whole, all the active system elements necessary to provide smart meter functionality from a person's property, to the energy supplier's systems.
Smart Metering Installation Code of Practice	The Smart Metering Installation Code of Practice (SMICoP) specifies the minimum standards of behaviour for suppliers to follow throughout the smart meter journey. The Code is mandated and is applicable to all domestic and microbusiness suppliers, except where the Code is explicit that the conditions apply to one or other. The Code describes specific activities in the period from being contacted about installation and setting it up, and the period from having the smart meter installed, to the customer receiving the first bill using smart meter data for meters in credit mode, or the first vend for meters in prepay mode.
Switch	To describe switching from one supplier to another, or between tariffs with one supplier.
Tariff	Charges for energy supply.

Term	Description
The energy market	Refers to the resale of gas and/or electricity.
Traditional meter(s)	Traditional meters are currently found in most homes. They are not able to communicate and therefore must be manually read. They will be replaced by smart meters during the national rollout.
Upgrade	The process of moving from a traditional meter to a smart meter.
Vulnerability	Ofgem's definition of vulnerability is when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where he or she is: • significantly less able than a typical consumer to protect or represent his or her interests in the energy market; and/or • significantly more likely than a typical consumer to suffer detriment, or that detriment is likely to be more substantial
Wide Area Network	Communication between the smart comms hub and the Data Communications Company, via the appropriate Communications Service Supplier (Telefonica or Arqiva) is known as the Wide Area Network (WAN).

Appendix

Audience characteristics mapped across stages of the smart meter journey

Age 75 and over Definition: Age 75 and over		
Hearing about smart meters	The message doesn't reach them	Less likely to be reached via outdoor media channels (TGI) and more likely to leave their home infrequently – 6 per cent of older people, nearly 600,000, leave their house once a week or less (Victor, Scambler, Bond, Bowling, 2003) and over 65s are estimated to spend 8 per cent of their time in the home (Help the Aged, 2006). Less likely to consume online communications (TGI) – over 75s are less likely to have internet access (Office for National Statistics, May 2014) and over 65s are less likely to be confident/competent online (BBC, November 2014) and technological take-up of most services and devices drops significantly for the 65 and over age group (Ofcom, August 2014).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Although those aged 75 and over watch more TV per day than any other age group, and so tend to be exposed to more TV advertising, some sources suggest that they are less likely to buy products where the marketing does not relate to and engage them (ILC-UK for Age UK, October 2010). DECC research found people aged 65 and over were more likely to be generally not interested in having a smart meter. Reasons relating to inconvenience were more likely to be mentioned by the aged 75 and over age group (Department of Energy & Climate Change, September 2013). More likely to think a smart meter is more hassle than it's worth (Populus, March 2015) and/or be complicated and difficult to understand, so messaging will need to challenge this. Digital switchover showed that when communicating a technical or complex change, one, simple solution is required to provide reassurance to this age group (Digital UK, *Communicating with older audiences*, 2012). DECC research found those aged 75 or over were more likely to mention sourcing advice about smart meters from friends and relatives (Department of Energy & Climate Change, September 2013). More likely to live alone – nearly 2.5 million people aged over 75 live alone (Office for National Statistics, March 2013) – 17 per cent of older people have less than weekly contact with family, friends and neighbours, 11 per cent monthly (Victor, Scambler, Bond, Bowling, 2003). However, 48 per cent of over-65s are active in social activities in their local area, although this is less than other age groups (Department for Environment, Food and Rural Affairs, 2011). 47 per cent of those aged 75 and over have a limiting longstanding illness (Office for National Statistics, March 2013, 193) and the majority of people over 75 have three or more long term health conditions (Barnett, Mercer, Norbury, Watt, Wyke, Guthrie, July 2012). Technological take-up of most services and devices drops significantly for the 65 and over age group (Ofcom, August 2014).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	May fear change/installers they don't know coming into their home. Telephone systems: older people are more likely to find these systems difficult and have expressed a preference for speaking directly to a real person (George, Graham, Lennard, 2011).
	Difficulty preparing for installation	May require help preparing for installation, e.g. moving items due to mobility or dexterity issues (in Ofcom, September 2013 research, 32 per cent of respondents with a mobility impairment were aged 75 or over).

Age 75 and over		
Definition: Age 75 and over		
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	DECC research found lower smart meter display ownership among people aged 75 and above. Of those who have a smart meter, just 8 per cent of those aged 75 and over have a smart meter display, compared with 17% of those aged between 35–74 (Department of Energy & Climate Change, September 2013).
		May have difficulty engaging with the smart meter display – technological take-up of most services and devices drops significantly for the 65 and over age group (Ofcom, August 2014). However, in a study on the role of technical self confidence in the usability of an inclusive heating controls, older people reported high levels of technical self confidence and were found to be willing to engage with the technical prototype. This highlights the high expectations of older users to be able to effectively engage with new technological systems (Combe, Harrison and Dong, 2011).
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	DECC research found that those aged 75 and over who had a smart meter display were less likely to use them – 18 per cent compared with 51 per cent of all respondents who claimed to look at least occasionally (Department of Energy & Climate Change, September 2013).
		May have additional income challenges and/or under occupy their home, 1.6 million pensioners are experiencing relative low income (Department for Work & Pensions, July 2014) and over 3 million older people in the UK were concerned about staying warm in their own home in winter 2012 (TNS Winter Omnibus Survey for Age UK, referenced by Age UK, April 2015). Over a third of older people live in one room to reduce their heating bill (Office for National Statistics, referenced by Age UK, April 2015). Additional information/advice may be required to ensure that they don't go to extremes to save energy, e.g. not maintaining an adequate level of warmth.
		Households where the oldest person is aged 75 or over are more likely to be in homes with poor energy efficiency compared with other households (Department for Communities and Local Government, July 2014). Older people may also be particularly vulnerable to the impacts of cold homes, e.g. cold temperatures increase health risks such as strokes, circulatory problems and hospital admission (Woodhouse PR, Kha, Plummer and Rudge, Gilchrist, referenced by Public Health England, September 2014). Estimates suggest that 10% of excess deaths are attributable to the coldest quarter of homes (Hills, March 2012).
	Difficulty choosing the right deal or supplier for them	Consumers aged 65 and over are less likely to have switched (Ipsos MORI, June 2014). Just 10% of those aged 65 and over have, compared with 19 per cent of those aged 25 to 34 (Consumer Focus, January 2013).
		Older households explain their reluctance to change energy suppliers in terms of loyalty. They wrongly perceive switching to be difficult, and the belief that there is little point in switching (Ipsos MORI, June 2014). However, those aged over 65 are much more likely to switch after being contacted directly by an energy supplier (47 per cent) and much less likely to switch using a telephone or online price comparison service (14 per cent). Therefore, they may not have the information to make an informed decision (Consumer Focus, January 2013).

Blind or partially sighted

Definition: This includes people registered blind or partially sighted who have severe and irreversible sight loss (Royal National Institute of Blind People)

Hearing about smart meters	The message doesn't reach them	Radio is our only purely audio channel. TV, out of home and digital are a big part of our reach, where there may be reduced consumption among this group (TGI). However, Ofcom (Ofcom, August 2014, Ofcom, May 2010) found that 75 per cent of those with a visual impairment have internet access. May not be reached by some mainstream media channels: almost half of blind and partially sighted people feel 'moderately' or 'completely' cut off from people and things around them (Royal National Institute of Blind People, February 2014).
	The message isn't adequately understood	Large and giant print, audio and electronic (via screen-reading technology/zoom text) are the main ways in which blind and partially sighted people access information (confidential *Smart energy for all* response). Braille is the preferred reading medium of approximately 18,000 blind and partially sighted adults in the UK (Royal National Institute of Blind People, August 2014).
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	The decision to say yes to a smart meter is at least in part linked to whether the meter, smart meter display and associated information about the national smart meter rollout are accessible (confidential *Smart energy for all* response). Social relevance: reduced self-confidence, particularly in new environments, can prevent people with sight loss going out and about. Older people with sight loss also have greater difficulty getting out and about and are at greater risk of social isolation than the general population (RNIB, July 2012).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Telephone systems: more likely to find these systems difficult. Have expressed a preference for speaking directly to a real person (George, Graham and Lennard, 2011). Blind people have reported that call centre workers assume that callers can see, and are unable to divert from the script – even when they know that the customer cannot do what they are asking, e.g. read a serial number (Ofcom, May 2010).
	Difficulty preparing for installation	May require support physically preparing for installation.
Having the smart meter installed	Difficulty on installation day	The installer should tailor the installation appropriately, e.g. demonstrations and literature provided (SMICoP, February 2015).
Using and benefiting from smart meters	Difficulty using the smart meter display	The smart meter display should be designed to enable information to be displayed and accessed easily by someone with a visual impairment. However, additional information/support may be required to communicate this.
	Difficulty understanding the information provided on the smart meter display	If the information provided is accessible, understanding is not an issue (confidential *Smart energy for all* response).
	Difficulty using the information to take control of their energy usage	DECC research shows that using smart metering to understand and reduce energy consumption is a benefit welcomed by many households with blind and partially sighted people. As a result of their impairment, some blind and partially sighted consumers are relatively intensive users of energy. This may be due to a variety of factors, such as being at home for much of the day and being retired. They may also have difficulty seeing/adjusting heating controls. Blind and partially sighted people also tend to be amongst the less well-off groups in society, and therefore particularly vulnerable to fuel poverty (Department of Energy & Climate Change, March 2013).
	Difficulty choosing the right deal or supplier for them	Accessibility may present a barrier in terms of understanding energy use in order to make an informed decision (confidential *Smart energy for all* response). DECC research shows that switching energy supplier is seen by many blind and partially sighted consumers as being more hassle than it's worth (Department of Energy & Climate Change, March 2013).

Cannot speak English or Welsh proficiently		
Definition: Non-proficient – cannot speak English or cannot speak English well (English or Welsh in Wales) (Census)		
Hearing about smart meters	The message doesn't reach them	Message may not reach them via some mainstream media channels. Many people from minority ethnic backgrounds tend to ignore mainstream communications and only tune in to communications specifically designed for them, e.g. events in their area or leaflets in their language (Digital UK, April 2012).
	The message isn't adequately understood	Take out from English ads may be substantially lower than translated TV ads (Digital UK, April 2012). May not know English well enough to understand a technical topic (Digital UK, April 2012).
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Switchover's 'Digit Al' was seen as a cartoon character to entertain children, or was considered distracting by some minority ethnic audiences. In response, creative was amended so that it used characters and costumes reflecting key minority ethnic groups. Digit Al was used as a way of linking this to the mainstream campaign, so when minority ethnic groups saw him in English advertising, they'd notice it and recognise what it was about (Digital UK, April 2012). May encounter additional cultural barriers, which lead to the message failing to resonate. People with a main language other than English who cannot speak English well or at all have a lower proportion of 'good' general health (Office for National Statistics, August 2013).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Telephone systems: those without English as a first language are more likely to find these systems difficult. May have a preference for speaking directly to a real person (George, Graham and Lennard, 2011).
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	Installers will need to tailor the installation appropriately.
Using and benefiting from smart meters	Difficulty using the smart meter display	Plain and intelligible language is a requirement for smart meter display design. However, support for Welsh/multi-lingual capability is not. Nevertheless, DECC research found that of those who do not speak English as a first language, ownership of a smart meter display does not vary significantly among those who have a smart meter installed, nor did interest in having one installed (Department of Energy & Climate Change, September 2013).
	Difficulty understanding the information provided on the smart meter display	Smart meter displays do not currently have multi-lingual capability (including Welsh), so audience may not be able to understand information provided.
	Difficulty using the information to take control of their energy usage	Lower rate of employment for those who are non-proficient in English, and those in work are more likely to work in elementary, machine operative and skilled trades occupations (Office for National Statistics, *Detailed analysis - English language proficiency in the labour market*, January 2014), so likely to be on a lower income. Therefore, there may be limits in the degree to which they can take control of their energy use.
	Difficulty choosing the right deal or supplier for them	Lack of language proficiency may hamper ability/perceived ability to switch. May make them more susceptible to switching without being adequately informed about the choices available.

Dependent on medical equipment powered by electricity

Definition: Dependent on medical equipment powered by electricity, e.g. stair lift, electric wheelchair, defibrillator or dialysis machine (no formal definition found. Examples provided by Energy UK)

Hearing about smart meters	The message doesn't reach them	In some instances, may leave their home less frequently, so there may be less consumption of outdoor channels, although TV and radio are still likely to be consumed highly.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Will require advance notice of planned electricity interruption during installation.
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	Alternative power supply/back-up systems should be in place. The smart meter installer will need to check that suitable arrangements exist before commencing installation (confidential *Smart energy for all* response).
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty choosing the right deal or supplier for them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

Dexterity impairment		
Definition: Severe impact on ability to carry out everyday activities such as gripping, holding and writing or limits movement in the shoulders (Office for National Statistics)		
Hearing about smart meters	The message doesn't reach them	Less than average out of home media consumption (TGI proxy). Although there's higher than average consumption of both BBC and commercial TV and radio, this audience has a reduced online media consumption, so may not be reached by online media channels (TGI proxy).
		Difficulties using a keyboard and mouse can limit the time spent online. However, due to the often fluctuating nature of dexterity impairments, communications technologies will be much easier to use on certain days than on others (Ofcom, September 2009).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Additional support may be required to ensure social resonance: more likely to live alone (a third of this group do), or be divorced/widowed (26 per cent vs national average of 12 per cent) (TGI).
		More likely to be older – over 50 per cent of this group are aged 65 and over (TGI), so other age-related barriers may apply.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	May have more difficulty arranging installation via the telephone, due to difficulties holding a handset. However, alternative solutions are likely to be in place (confidential *Smart energy for all* response).
	Difficulty preparing for installation	May have difficulty preparing for installation where furniture/belongings need to be moved to clear the way.
Having the smart meter installed	Difficulty on installation day	As they are more likely to rent from the council (Populus, March 2015), landlord/tenant will need to be present on day of installation.
Using and benefiting from smart meters	Difficulty using the smart meter display	Dexterity issues may impact ability to use/perceived ability to use the smart meter display. However, the smart meter display should be designed to enable information to be displayed and accessed easily by someone with a dexterity impairment (SMICoP, February 2015).
	Difficulty understanding the information provided on the smart meter display	As they're more likely to be older, technological fears often associated with increased age (Ofcom, August 2014) may apply.
	Difficulty using the information to take control of their energy usage	Will have specific requirements around the design/format of information materials, e.g. avoid gatefolds and rollfolds and landscape paper as these are harder to turn for those with dexterity issues. Textured paper is also easier to handle (Digital UK, *Approach to accessibility*, online, last accessed March 2015).
	Difficulty choosing the right deal or supplier for them	Those with a physical impairment now show an annual switching rate that is not notably different to the wider population. However, customers with a physical impairment find comparison significantly more difficult than those without one (Ipsos MORI, June 2014).

Have a district heating requirement (separate electricity meter) Definition: No universally agreed definition for district heating. Either: • two or more distinct buildings connected to a single heat source or • one building in which there are more than ten individual customers connected to a single heat source (Department of Energy & Climate Change)		
Hearing about smart meters	The message doesn't reach them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	May not realise that smart meter communications are relevant, i.e. that they can still have a smart electricity meter.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty choosing the right deal or supplier for them	District heat consumers are unable to switch their heating supplier (Which?, March 2015), but we have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey regarding switching their electricity meter.

Lacking basic digital skills		
Definition: Defined as lacking the skills to: • manage information, i.e. find, manage and store digital information and content • communicate, i.e. interact, collaborate, share and connect with others • transact, i.e. purchase and sell goods and services; organise their finances • problem solve, i.e. increase independence and confidence by solving problems using digital tools and finding solutions • create, i.e. engage with communities and create basic digital content (Go ON UK)		
Hearing about smart meters	The message doesn't reach them	Significantly lower online consumption – although they may have personal internet access they may have more difficulty taking advantage of online communications as they don't have the Basic Digital Skills to benefit. However, higher consumption of BBC and commercial TV and radio. Higher press consumption (apart from quality print) and slightly higher consumption of OOH (TGI proxy).
	The message isn't adequately understood	Some people may be hiding the real reasons they're not online, like low literacy skills (Government Digital Service, December 2014).
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	More likely to be older – people without Basic Digital Skills are most likely to be aged over 55, 18 per cent are aged between 55–64 and 57 per cent are aged 65 and over (BBC, November 2014) and may have additional disabilities, so further information/support may be required in order for the message to resonate. Technological: in addition, technological take-up of most services and devices drops significantly for the 65 and over age group (Ofcom, August 2014). Social relevance: more likely to be older (and so more likely to live alone, less likely to have children at home) (TGI).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Offline means of saying yes to installation, e.g. a telephone number, may be required.
	Difficulty preparing for installation	More likely to be older, so additional support may be required to physically prepare for installation (TGI proxy).
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	Technological take-up of most services and devices drops significantly for the 65+ age group (a key demographic within this group), so may not be confident using the display (Ofcom, August 2014).
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	Will require offline communications/may require additional support to understand how to take full advantage of smart meter benefits. Some people may be hiding the real reasons they're not online, like low literacy skills, by saying they're not interested (Government Digital Service, December 2014). Likely to have a lower household income – 34 per cent earn less than £17k and 62 per cent are not working, 45 per cent are retired (TGI), so may require additional information/support to take control their energy use if energy use is already low.
	Difficulty choosing the right deal or supplier for them	Lacking basic digital skills is not a barrier to switching. However, Consumer Focus research found consumers in more vulnerable positions were much more likely to have switched after being contacted directly by an energy supplier: 36 per cent (either on the doorstep, in a public place or by phone), 33 per cent (a price comparison site or phone line). However, they will not have access to information on the full range of tariffs offered by different suppliers (Consumer Focus, January 2013) in order to make an informed decision.

Learning impairment		
Definition: Moderate to severe learning disability (IQ of 50 or below). Likely to have some language skills that mean they can communicate about day-to-day needs and wishes. Some people may need more support caring for themselves, but many will be able to carry out day-to-day tasks (British Institute of Learning Disabilities)		
Hearing about smart meters	The message doesn't reach them	May affect ability to listen, think, read, or understand, so mainstream media may not always reach them. May not be reached via online channels and rely on auditory sources of information. Household internet use appears to be lower among people with learning disabilities due to lower literacy levels and greater impact of the costs involved (Ofcom, September 2013). Nearly a fifth (18 per cent) of consumers with a learning disability say their disability prevents or limits their use of the internet (Ofcom, January 2015). Due to low levels of literacy, these groups rely on auditory sources of information and entertainment. (Consumer Expert Group for Department for Culture, Media and Sport, January 2014).
	The message isn't adequately understood	Impairment may hamper ability to understand the message.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Telephone systems: more likely to find these systems difficult. Have expressed a preference for speaking directly to a real person (George, Graham and Lennard, 2011). Those with learning impairments talk about not having the confidence to deal with energy suppliers without help (BritainThinks, July 2013).
	Difficulty preparing for installation	Between 25–40 per cent of people with learning disabilities are estimated to have a mental health problem (Foundation for people with learning disabilities online, accessed March 2015). Around a third of people who have learning disabilities also have autism (Emerso, Baines, *The estimated prevalence of autism in young adults with learning disabilities in England,* 2010) so emotional preparation for installation may be an issue.
Having the smart meter installed	Difficulty on installation day	May struggle to understand explanations of smart metering equipment and whether to accept a smart meter display (confidential *Smart energy for all* response).
Using and benefiting from smart meters	Difficulty using the smart meter display	Smart meter display design requirements aim to ensure that people with a learning impairment can take advantage of the information presented. However, consumers with a learning impairment may need additional support to help/encourage them to engage with the display.
	Difficulty understanding the information provided on the smart meter display	May require additional support to understand the information provided and presented on the display and/or apply it.
	Difficulty using the information to take control of their energy usage	Less likely to be in employment: in 2010/11, only 6.6 per cent of adults with learning disabilities were reported to be in some form of paid employment and the majority worked part time (Foundation for people with learning disabilities, accessed March 2015). Also likely to be on a low income (Populus, March 2015), so control of energy use may be limited if it's already at very low levels.
	Difficulty choosing the right deal or supplier for them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

Living in a cold and inefficient home

Definition: EPC rating F or below

This vulnerability was identified by Ofgem, but no definition offered. DECC has proposed a minimum energy efficiency standard across the domestic private sector of EPC rating E or above, which we are using to define this potential vulnerability. This means needing to spend on average £1,000 a year more on energy to heat their home compared to a typical home (Secretary of State)

Hearing about smart meters	The message doesn't reach them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	May be resistant to adopting a smart meter because of fear that this may change, or even increase their energy costs.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	May not be able to realise the full benefits of the smart meter as ability to reduce energy use will be hindered by the inefficiency of the home they live in. May be living in fuel poverty. Fuel poor households are more likely to live in energy inefficient homes across all tenures compared to non-fuel poor households (UK Health Forum, April 2014). Energy efficient homes would lift 9 out of 10 homes out of fuel poverty (Camco, February 2012), so tailored energy efficiency advice may be required if the household is fuel poor due to cold/inefficient housing.
	Difficulty choosing the right deal or supplier for them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

Low income		
Definition: Relative low income: individuals are defined as in low income, when the household in which they live has income less than 60% of the national median (before housing costs, including rent, water rates, mortgage interest payments, buildings insurance payments and ground rent and service charges) (Department for Work and Pensions)		
Hearing about smart meters	The message doesn't reach them	Slight over-index of BBC and commercial TV, although a lower than average consumption of radio (BBC and commercial). In addition, a lower than average consumption of out of home media and online media, although higher than average consumption of popular print titles (TGI). For those living in fuel poverty, information should be delivered via post, newspapers and the internet (BritainThinks, March 2015).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Those on lower incomes are 6 per cent less interested in having a smart meter installed than the GB population; this is shown for both pre- and post-exposure to smart meter benefits (Populus, March 2015). However, avoiding waste is of particular importance to those on lower incomes who say they are interested in smart meters (Department of Energy & Climate Change, Quantitative research into public awareness, attitudes, and experience of smart meters (Wave 3), September 2013). DECC research shows that those on lower incomes are less positive about smart meters and smart meter displays overall. In addition, they are much less likely to agree they could do more to reduce their energy use (Department of Energy & Climate Change, September 2013). One-third of people on a low income live alone and they are more likely to be widowed or divorced, 22 per cent compared with 12 per cent national average (TGI), so social relevance may be absent. Less likely to own their home, so barriers detailed in the characteristics – social housing tenant and private housing tenant have relevance here (TGI). More likely to be older, 29 per cent are aged 65 and over compared with a national average of 25 per cent (TGI), so factors related to age may also be present.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Those in particularly vulnerable situations perpetuated by low incomes are likely to have the most extreme views towards energy suppliers, especially if they have had problems paying bills or with energy-related debt (BritainThinks, July 2013).
	Difficulty preparing for installation	May find it difficult to take time off work, particularly if working irregular hours/shifts/zero hours contract. Conversely, irregular hours/shifts/zero hour contracts could make it easier to be present during normal working hours (confidential *Smart energy for all* response).
Having the smart meter installed	Difficulty on installation day	As they're more likely to rent, the landlord/tenant may want or need to both be present at point of installation. Nature of employment, e.g. irregular hours/shifts/a zero hours contract, may make keeping the appointment difficult.

Low income		
Definition: Relative low income: individuals are defined as in low income, when the household in which they live has income less than 60% of the national median (before housing costs, including rent, water rates, mortgage interest payments, buildings insurance payments and ground rent and service charges) (Department for Work and Pensions)		
Using and benefiting from smart meters	Difficulty using the smart meter display	Smart meter display ownership is lower among those with lower annual household incomes and they're less likely to be interested in having one installed (Department of Energy & Climate Change, September 2013).
	Difficulty understanding the information provided on the smart meter display	Less likely to say the smart meter display is easy to use or that they understand how to operate its different functions. More likely to stop using the smart meter display because they don't understand it (Ipsos MORI for Department of Energy & Climate Change, *Smart metering early learning project; consumer survey*, March 2015).
	Difficulty using the information to take control of their energy usage	Those on lower incomes are much less likely to agree that they could do more to reduce their energy usage (Department of Energy & Climate Change, September 2013). Lower levels of engagement with smart meter displays among people with low incomes (Department of Energy & Climate Change, September 2013). Less likely to have their smart meter display plugged in, say it was easy to use, say they knew how to operate different functions (Ipsos MORI for Department of Energy & Climate Change, *Smart metering early learning project; consumer survey*, March 2015). 64% of people on low incomes aren't working at all and a further 18% work part time (TGI), so energy consumption may be higher, due to longer lengths of time spent at home. This may limit the degree to which they can take control of their energy usage whist still maintaining adequate warmth. Less likely to consume online media and therefore have fewer channels through which to engage with post-installation information and support.
	Difficulty choosing the right deal or supplier for them	The poorest consumers have a lower switching rate than the wealthiest – 13% compared to 17%. The poorest customers and those paying by prepay, cash or cheque, are also much less likely to switch again in future (43% of those in the DE group said they would not switch again compared to 17% of the AB group) (Consumer Focus, January 2013). Around half of those in the poorest/most vulnerable social groups have switched after being contacted directly by an energy supplier, compared to around one in five of the wealthiest (Consumer Focus, January 2013), meaning they may not have the information available to make an informed decision.

Low literacy		
Definition: Literacy levels at level 1 or below, e.g. may not be able to identify the location of a named place in a short descriptive paragraph (Department for Business, Innovation & Skills)		
Hearing about smart meters	The message doesn't reach them	Likely to consume less BBC TV and radio, although this group over-indexes on commercial TV and radio (auditory channels are key for this audience). Reduced internet and out of home consumption compared with the national average, so less likely to be reached by internet and outdoor channels. (TGI proxy).
	The message isn't adequately understood	May have difficulty understanding some mainstream media messages such as out of home or struggle finding information in written and offline sources. People with low literacy are more likely to have reduced access to technology and struggle to use government websites without support (Government Digital Service, May 2014), so online communication will be a challenge.
		DECC research found that consumers with low literacy may find it harder to define what a smart meter is (National Energy Action and RS Consulting for Department of Energy & Climate Change and Consumer Focus, November 2012).
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Less likely to own their home, so barriers detailed in the social housing tenant and private housing tenant characteristics have relevance here (TGI).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Those with literacy issues talk about not having the confidence to deal with energy suppliers without help (BritainThinks, July 2013). However, when arranging installation, the supplier should make all reasonable endeavours to identify whether the customer has low literacy levels and act accordingly (SMICoP, February 2015).
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	Complex or written information provided at point of installation may present a problem. The installer demonstration should be appropriate for those with low literacy levels and comms materials and energy efficiency guidance will be provided in a format suitable for those with low literacy levels (SMICoP, February 2015).

Low literacy		
Definition: Literacy levels at level 1 or below, e.g. may not be able to identify the location of a named place in a short descriptive paragraph (Department for Business, Innovation & Skills)		
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	May not engage with the display due to confidence issues with reading or interpreting the information provided on the display.
	Difficulty using the information to take control of their energy usage	May have difficulty understanding complex written messages/literature and require alternative means of support/formats. Among smart meter customers, post-installation literature is often not given more than a 'cursory look' by those with low literacy, due to perceptions that they wouldn't understand it (National Energy Action and RS Consulting for Department of Energy & Climate Change and Consumer Focus, November 2012). More likely to have trouble managing daily living and tasks and/or have a low household income. Fifty seven per cent have a household income of less than £23k compared to the national average of 37 per cent (TGI proxy), so there may be limits to which they can use information to take control of their energy usage and still maintain adequate warmth. May require additional support to use the smart meter display – NEA research found of those not using the display/intending to do so, some may have low literacy levels (National Energy Action and RS Consulting for Department of Energy & Climate Change and Consumer Focus, November 2012).
	Difficulty choosing the right deal or supplier for them	Literacy issues may prevent switching/perceived ability to switch and make them more susceptible to switching when approached by a supplier, so may not have the range of information available to make informed choices.

Low numeracy

Definition: Numeracy skills at level 1 or below, e.g. may not be able to find the most popular holiday destination on a simple bar graph (Department for Business, Innovation & Skills)

Hearing about smart meters	The message doesn't reach them	Some mainstream media messages will not reach them. Likely to under-index on out of home, BBC TV and radio, but over-index on commercial TV and radio (TGI proxy).
		Less likely to be reached by online channels (TGI proxy). Low numeracy is linked to low computer experience and internet access is linked to higher levels of numeracy and literacy (Department for Business Innovation & Skills, October 2013).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	May be put off by perceived numerical technicality of a smart meter.
		Less likely to own their home, so barriers detailed in the social housing tenant and private housing tenant characteristics have relevance here (TGI).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Those with numeracy issues talk about not having the confidence to deal with energy suppliers without help (BritainThinks, July 2013).
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	May have difficulty understanding the numeric information displayed and/or fail to engage because of perception that they won't be able to.
	Difficulty using the information to take control of their energy usage	More likely to have a low household income, so there may be limits to the extent to which they can control their energy use if it's already low. Fifty seven per cent have a household income of less than £23k compared to the national average of 37 per cent (TGI proxy).
	Difficulty choosing the right deal or supplier for them	May require additional support to switch tariff/supplier due to lack of confidence dealing with energy suppliers without help (BritainThinks, July 2013).

Memory impairment

Definition: This includes dementia and associated symptoms, including mild cognitive impairment; problems with day-to-day memory, planning, language, attention and visuo-spatial skills, e.g. interpreting objects and shapes (Alzheimer's Society)

Hearing about smart meters	The message doesn't reach them	Less likely to feel part of their community or leave their house often (Alzheimer's Society, September 2014), so less likely to consume outdoor media. Dementia can affect people of all ages, but high correlation with media consumption habits of over 75s i.e. over-index on TV and radio (apart from commercial) and print. Reduced out of home and online media consumption (TGI). Long-term familiarity with radio means that it is the main source of information and entertainment for many people affected by dementia (Consumer Expert Group for Department for Culture, Media and Sport, January 2014).
	The message isn't adequately understood	Message may need to be repeated several times to be adequately understood.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	May find it more difficult to engage with information and require others to provide support/social relevance – around one-third of those diagnosed with dementia live on their own (Mirando-Costillo, 2010, referenced by Alzheimer's Society, *People with dementia living alone*, online, accessed July 2015). In a 2014 survey of 1,000 people with dementia, almost 1 in 10 were found to only leave the house once a month and less than half felt part of their community (Alzheimer's Society, Dementia 2014, September 2014). People with dementia often have problems with thinking and reasoning and distrust unfamiliar things (Consumer Expert Group for Department for Culture, Media and Sport, January 2014). Likely to be living with another medical condition or disability as well as dementia – a 2014 survey of 1,000 people with dementia found that 72 per cent were living with another medical condition or disability (Alzheimer's Society, *Dementia 2014*, September 2014), so additional support is likely to be required for the smart meter message to resonate.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	May require assistance arranging installation – those with dementia are more likely to find it difficult to consistently organise their correspondence, so may require help arranging installation (BritainThinks, July 2013).
	Difficulty preparing for installation	May require additional reminders/support to ensure installation takes place. Almost 60% of all people living with dementia have stopped doing things that they used to as a result of mobility difficulties (Alzheimer's Society, April 2013), so may have additional problems physically preparing for installation.
Having the smart meter installed	Difficulty on installation day	May require a nominated person to be present on installation day.

Memory impairment		
Definition: This includes dementia and associated symptoms, including mild cognitive impairment; problems with day-to-day memory, planning, language, attention and visuo-spatial skills, e.g. interpreting objects and shapes (Alzheimer's Society)		
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	Smart meter display design requirements aim to ensure that people with a memory impairment can use information presented on the display. However, may lack comprehension/require additional support to understand and/or apply the information.
	Difficulty using the information to take control of their energy usage	May lack comprehension/require additional support to apply the information.
	Difficulty choosing the right deal or supplier for them	Links with age (although this is not always the case) and therefore reduced likelihood of switching and increased risk of switching when approached by their supplier/on the doorstep, without having the information to make an informed decision (Consumer Focus, January 2013).

Mental health impairment		
Definition: Mental health issues which have a long-term effect on normal day-to-day activity (Defined under the Equality Act 2010).		
Hearing about smart meters	The message doesn't reach them	For people with poor mental health, tendencies towards self-isolation and problems with socialising make radio a vital connection to the outside world (Consumer Expert Group for Department for Culture, Media and Sport, January 2014). However, the same factors may also lead to reduced consumption of outdoor media channels.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	May find it more difficult to engage in the smart meter adoption/usage process. For example, due to depression, they're unable to function normally or make decisions/follow through on tasks. More likely to be in rented accommodation (Populus, March 2015), with greater uncertainty about how long they can remain in their current home (Johnson, Griffiths, Nottingham, referenced by Mental Health Network of the NHS Confederation, December 2011). Additional communications may be required to highlight landlord/tenant rights and the benefits of having a smart meter installed if they don't plan to remain in the property long (Mental Health Network of the NHS Confederation, December 2011). Social resonance: more likely to live alone or with one other person and be single (Populus, March 2015). One in 4 people using mental health services has no contact with their family, and 1 in 3 has no contact with friends (NHS, referenced by Mental Health Foundation, January 2007).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Those with less severe mental conditions (including less severe cases of depression and anxiety) express strong issues with both having to call energy suppliers and having to go through lengthy menu options and waiting times (BritainThinks, July 2013). Many people with mental health issues speak of not opening correspondence that comes in the post for fear of bills (either not being able to pay them, or not being able to face dealing with the paperwork) (BritainThinks, July 2013).
	Difficulty preparing for installation	Less severe mental health conditions such as intermittent or low-level depression and anxiety can induce stress and/or apathy which may cause difficulties for them to mentally/emotionally prepare for installation (BritainThinks, July 2013).
Having the smart meter installed	Difficulty on installation day	Far more likely to live in unstable environments (Johnson, Griffiths, Nottingham, referenced by Mental Health Network of the NHS Confederation, December 2011), which may make keeping the appointment difficult. May have trouble opening doors to visitors (BritainThinks, July 2013). This behaviour can vary from day to day. Around 30% of those suffering from a long-term physical health condition also have a mental health problem (Barnett, Mercer, Norbury, Watt, Wyke, Guthrie, July 2012), so there may be additional physical barriers.

Mental health impairment		
Definition: Mental health issues which have a long-term effect on normal day-to-day activity (Defined under the Equality Act 2010).		
Using and benefiting from smart meters	Difficulty using the smart meter display	NEA research found that customers with a smart meter who had mental health conditions found it challenging to engage with the smart meter display (National Energy Action and RS Consulting for Department of Energy & Climate Change and Consumer Focus, November 2012).
	Difficulty understanding the information provided on the smart meter display	NEA research found people with mental health problems may find it harder to understand the smart meter display and how it works or successfully take advantage of its benefits (National Energy Action and RS Consulting for Department of Energy & Climate Change and Consumer Focus, November 2012).
	Difficulty using the information to take control of their energy usage	People with mental health problems are twice as likely as those without a mental health condition to be unhappy with their housing and four times more likely to say that it makes their health worse (Social Exclusion Unit, June 2004), so living in a cold, inefficient home may be a factor. This may be difficult to control, particularly as they're more likely to have a low income (Populus, March 2015). Household income correlates strongly with incidence of common mental health problems and fuel poverty is commonly associated with mental health issues (Harris, Hall, Meltzer, Jenkins, Oreszczyn, McManus, 2010). People with mental health issues are over twice as likely as others to under-consume fuel as a result of cost worries and three times more likely than others to be seriously behind in paying for gas and electricity bills and/or have been disconnected in the past 12 months (Harris, Hall, Meltzer, Jenkins, Oreszczyn, McManus, 2010). Therefore, there may be a limit to which they can use a smart meter to control their energy use whilst still maintaining adequate warmth.
	Difficulty choosing the right deal or supplier for them	Those with a mental impairment show an annual switching rate that is not notably different to the wider population. However, customers with a mental impairment find comparison significantly more difficult than those without one (Ipsos MORI, June 2014).

Mobility impairment		
Definition: Severe impact on ability to carry out day-to-day activities such as sitting, standing, walking or climbing stairs (Office for National Statistics)		
Hearing about smart meters	The message doesn't reach them	Online or mobile channels are less likely to reach them – people with mobility impairments have lower levels of smartphone, PC and internet access (Ofcom, September 2013).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Social relevance: 47 per cent of people with a mobility impairment live alone (Ofcom, September 2013), so they're more likely to be the bill payer/decision maker and may require additional information/ support for the message to feel relevant in the context of their own lives. In Ofcom research, a third (32 per cent) of people with a mobility impairment were aged 75 or over (Ofcom, September 2013), so additional characteristics/circumstances related to age may also prevent engagement on the smart meter journey.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	May require additional support preparing for installation.
Having the smart meter installed	Difficulty on installation day	May experience difficulties with giving the installer access and upheaval whilst installation takes place. The smart meter display will need to be suitably located to accommodate mobility needs.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	People with mobility impairments are less likely to be employed and most likely not to be working due to a long-term illness/disability (wheelchair users are the least likely to be employed and people with other lower-body impairments are the most likely be retired, reflecting their older age profile) (Ofcom, September 2013). Therefore, they may already be limiting their energy use as much as they can whilst still maintaining adequate warmth. As nearly half of people with a mobility impairment live alone (Ofcom, September 2013), additional support/information may be required to ensure that they continue to use their smart meter after installation. As they're less likely to have smartphone, PC or internet access (Ofcom, September 2013), they will have difficulties with post installation literature/support, which is provided online.
	Difficulty choosing the right deal or supplier for them	Those with a physical impairment now show an annual switching rate that is not notably different to the wider population (Ipsos MORI, June 2014). However, customers with a physical impairment find comparison significantly more difficult than those without one.

No personal internet access		
Definition: No personal access to the internet anywhere, both inside and out of the home, including use via mobile devices (Ofcom).		
Hearing about smart meters	The message doesn't reach them	Online communications won't reach them. Calls to action will need to be offline as well as online. However, TGI proxy for lacking online capability shows that there's high consumption of TV and radio compared with the national average, print (apart from quality papers) and a slight increase in consumption of out of home. 47 per cent of the 6.4 million adults who had never used the internet in Q1 2014 were aged 75 years and over (Office for National Statistics, May 2014), so in almost half of cases, strong overlap with media consumption for over 75s, i.e. over-index on TV and BBC radio, some print media, lower out of home.
	The message isn't adequately understood	Additional messaging may be required to provide reassurance that smart meters don't require a broadband connection (although 'broadband not available in our area' was given as a reason for not having internet access by 1 per cent of households in 2014 (Office for National Statistics, August 2014) or digital skills. Thirty two per cent of people who have never used the internet say it's because of lack of skills (Office for National Statistics, August 2014).
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Of the 6.4 million adults who had never used the internet in the UK in Q1 2014, around half are disabled (30 per cent of the disabled population) – (Office for National Statistics, May 2014), so additional support may be required depending on type of impairment, in order for the message to resonate in the context of their own life. A high proportion of those who are digitally excluded are social housing tenants; exact figures vary, but a 2011 study found up to half (Housing Technology and Race Online 2012, November 2011), so the rights of the landlord/tenant to say yes will need to be clearly communicated. Lack of internet access is linked with age – 62.8 per cent of over 75s have never used the internet (Office for National Statistics, May 2014) – so there are likely to be other barriers, e.g. impairments or fear of technology, which may have to be overcome. 12 per cent of those without internet access say it's due to equipment costs being too high (Office for National Statistics, August 2014) and 11 per cent say because of access costs - may require additional reassurance that smart meters come at no extra cost.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Offline alternative of saying yes to installation may be required.
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

No personal internet access		
Definition: No personal access to the internet anywhere, both inside and out of the home, including use via mobile devices (Ofcom).		
Using and benefiting from smart meters	Difficulty using the smart meter display	Technological take-up of most services and devices drops significantly for the 65 and over age group (Ofcom, August 2014), a key demographic within this group, so may not be confident using the smart meter display.
	Difficulty understanding the information provided on the smart meter display	Thirty two per cent of households cite 'lack of skills' as the reason for lack of internet access (Office for National Statistics, August 2014). Barriers may need to be overcome to demonstrate that internet skills are not required to use the smart meter display.
	Difficulty using the information to take control of their energy usage	Lacking internet access is linked to low income – in Q1 2014, 4.9 per cent of adults earning less than £200 a week had ever used the internet, compared with 3.8 per cent earning between £200 – £299 and almost full coverage (99 per cent) of those earning £500 a week or more (Office for National Statistics, May 2014). Therefore, there may be limits to which they can control their energy whilst still maintaining adequate warmth. Many fuel poor households do not have access to the internet – a range of local authorities have run 'collective switching' schemes to get reduced fuel bills for residents who sign up and have failed to reach many people in fuel poverty due to lack of internet access (Age UK, *Are health and wellbeing boards taking fuel poverty seriously?*, 2013).
	Difficulty choosing the right deal or supplier for them	Those with internet access consider tariff comparison to be easier than those without. Perceived understanding of the range of energy tariffs is lower among those without internet access (Ipsos MORI, June 2014). Not having personal internet access is not a barrier to switching – Consumer Focus research has found that more than a third (36 per cent) of consumers switched after being contacted by an energy supplier (either on the doorstep, in a public place or by phone). However, they may not have the relevant information to make an informed decision (Consumer Focus, January 2013).

Off-gas grid		
Definition: Household not connected to the gas grid (Department of Energy & Climate Change)		
Hearing about smart meters	The message doesn't reach them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Additional communications may be required to highlight eligibility for a smart electricity meter (particularly if the property is in a very rural location).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	Fuel poverty, even among consumers not on the lowest incomes, is higher among off-gas grid consumers compared to gas consumers (GHK for Consumer Focus, October 2011). Consumers using heating oil and LPG often enjoy higher incomes than those using mains gas, but rates of fuel poverty are higher. This is because of higher prices and because these fuels are more commonly used in rural areas where the energy efficiency of houses is typically lower – houses are typically larger detached properties with solid wall construction where insulation is more difficult (GHK for Consumer Focus, October 2011). Therefore, there may be limits to which they can control their energy consumption. Rural off supply renters are more likely to be low income households and may struggle with their bills (confidential *Smart energy for all* response).
	Difficulty choosing the right deal or supplier for them	While switching rates among off-gas grid consumers are fairly low, the majority of consumers regularly compare prices to see if they can get a better deal (Consumer Focus, February 2012). Some off-gas grid customers are unaware of supplier services and may require additional education (confidential *Smart energy for all* response).

Prepay customer		
Definition: Prepay gas or electricity meter, or both, installed at the property		
Hearing about smart meters	The message doesn't reach them	Over one-third of prepay households contain someone with a long-term physical or mental health condition or a disability (Consumer Focus, July 2010) which may limit whether they can be reached by some mainstream media channels.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Need to understand the specific benefits of smart pay-as-you-go, although 78 per cent of current prepay customers are interested in upgrading to smart prepay (Populus, November 2014). Prepay customers can often feel neglected by their suppliers (Consumer Focus and Accenture, May 2013), so may be less receptive to communications about energy. More likely to live in social housing and rent from the council (Populus, March 2015). Additional communications may be required to ensure the bill payer's rights to agree/arrange installation are clear. 10% of students have a prepayment meter (National Union of Students, 2014). For electricity payments, a much higher proportion of households containing disabled people use prepay meters; 19.2 per cent compared with 12.1 per cent of households which don't contain someone who is sick or disabled. The trend is also notable amongst gas customers, but less pronounced, (14 to 9 per cent) (The University of York and Centre for Housing Policy, 2013). Therefore, additional information/support may be required to ensure the smart meter message resonates in the context of their own lives.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	May be more reluctant to speak to their supplier if in fuel debt. At the end of 2013, approximately 1.5 million domestic electricity accounts (6 per cent) and 1.4 million domestic gas accounts (6 per cent) were in debt to their energy supplier (Ofgem, December 2014).
	Difficulty preparing for installation	Prepay customers do not necessarily need to speak to their energy supplier to access and pay for their energy, so suppliers may not have contact details for those in prepay properties. This may make arranging an appointment more difficult (confidential *Smart energy for all* response).
Having the smart meter installed	Difficulty on installation day	As they're more likely to be in rented accommodation, landlord/tenant may need/want to be present at point of installation.

Prepay customer		
Definition: Prepay gas or electricity meter, or both, installed at the property		
Using and benefiting from smart meters	Difficulty using the smart meter display	If a prepay top-up does not happen automatically, entering a 20 digit vend code into the meter may be required. Other consumer characteristics may present barriers. These may include physical impairments, such as dexterity, mobility or sight, or those that may prevent understanding of how to enter the vend code (e.g. learning or memory impairment).
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	Smart prepay customers are generally not interacting with the energy consumption element of the smart meter display (Department of Energy & Climate Change, DECC smart metering implementation programme, March 2015). They will need additional support in both engaging with energy consumption information and acting upon it. Instead, they're primarily using it to monitor account balance (Ipsos MORI for Department of Energy & Climate Change, *Smart metering early learning project: synthesis report*, March 2015). While not all prepay users in Great Britain are from vulnerable groups, they remain disproportionately on low incomes compared to those using other payment types (Consumer Focus and Accenture, Smart metering prepayment in Great Britain, May 2013). Prepay households are more likely to be in fuel poverty than direct debit customers (Department of Energy & Climate Change, June 2014). Therefore, there may be limits to which they are able to control their energy usage whist still maintaining adequate warmth.
	Difficulty choosing the right deal or supplier for them	Prepay customers remain more strongly represented among the never switched group than those on direct debit (Ipsos MORI, June 2014). Current experiences show that direct debit consumers are more than twice as likely to use a price comparison service as prepay meter customers and three times more likely than cash and cheque customers. Those prepay customers who have switched are also less likely to switch again in future (Consumer Focus, January 2013). Prepay customers with a debt of over £500 will probably not be able to switch suppliers. A very small proportion may not have a bank account, making switching more difficult. In 2012/13, 4 per cent of households in England and Wales did not have a bank account, excluding a Post Office Card account (Department for Work & Pensions, July 2014).

Private tenant		
Definition: Accommodation that is rented from a private landlord or letting agency, employer of a household member, relative or friend of a household member, or other non-social rented accommodation (Census)		
Hearing about smart meters	The message doesn't reach them	Lower consumption of TV, radio (BBC and commercial) and print than the national average. However, there is higher out of home and online penetration (TGI).
	The message isn't adequately understood	Students: 46 per cent of students from the EU and 33 per cent of international students (from outside the EU) live in private rented accommodation, compared with 46 per cent of students from the UK (National Union of Students, 2014). However, there will be instances where language is a barrier to understanding the message.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Renter – may assume it is the landlord's choice or responsibility to get a smart meter. Additional communications may be required to highlight that it's the choice of the bill payer.

Landlord – if bills are included as part of the rental agreement, additional communications may be required to reach and engage the landlord.

High proportion of younger tenants – 60 per cent are aged between 15–34 and there are typically between 3–4 people in the household, reflecting flatshares (all TGI). They may only reside in the property for a limited length of time, e.g. the average private renter stays in their property for four years (Department for Communities and Local Government, July 2014), so extra information/support may be required to highlight potential smart meter benefits.

A third (34 per cent) have children at home, so may lead busy/chaotic lives (TGI). |
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	More likely to work full time; 46 per cent, compared with 38 per cent national average (TGI), but typically earn lower amounts (Department for Communities and Local Government, July 2014) so taking time off work, especially if that means they miss out on pay, will be challenging.
Having the smart meter installed	Difficulty on installation day	Landlord/tenant need to be present at point of installation.

Private tenant		
Definition: Accommodation that is rented from a private landlord or letting agency, employer of a household member, relative or friend of a household member, or other non-social rented accommodation (Census)		
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	Of the different tenure groups, households living in privately rented accommodations have continued to have the highest fuel poverty rates (Department of Energy & Climate Change, *Annual fuel poverty statistics report 2014*, June 2014). Twenty one per cent, or one in five privately rented homes (double the national average) is in fuel poverty. This compares with 8.5 per cent of households in the owner occupier sector. In 2011, around 190,000 households were classed as fuel poor and living in a private rented property with an EPC rating of F or G (all Department of Energy & Climate Change, 2014). The government has recently introduced new standards to improve the EPC rating of private tenanted properties to E by April 2018, but until these are enforced, there may be limits to which some properties can reduce their energy usage.
		Typically earn lower amounts, so may already have reduced their energy usage to a very low level.
		Students: low incomes and cold, inefficient homes may limit the extent to which they can control energy use. An NUS survey found that 39 per cent of students struggle with energy bills, 76 per cent limit the length of time they turn the heating on and to cope with living in cold homes, 66 per cent wear more than one layer of clothing to bed and 76 per cent have experienced at least one problem with the condition of their private rented home (National Union of Students, 2014).
		May require additional support/encouragement to use the information on the display if the landlord, rather than the tenant, has not been engaged on the smart meter journey up until that point.
	Difficulty choosing the right deal or supplier for them	Non-switchers are most likely to include those who rent their homes (Ipsos MORI, June 2014).
		Communications may be required to highlight that tenants can switch if they are the bill payer. However, they may be required under their tenancy agreement to tell their landlord.

Severe or profound deafness		
Definition: Severe or profound deafness, i.e. the quietest sounds people with severe deafness can hear are 70 decibels, i.e. cannot hear normal conversation. May lip-read, have a hearing aid, or use sign language (Action on Hearing Loss)		
Hearing about smart meters	The message doesn't reach them	May not be able to take advantage of specific media channels, e.g. radio.
		If living alone, people with hearing impairments are likely to have lower levels of internet access than non-disabled people (Ofcom, September 2013).
		There are approximately 356,000 people with a combined visual and hearing impairment in the UK (Action on Hearing Loss, April 2015). Message is unlikely to reach them via a wide variety of media channels.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Social resonance: hearing loss causes difficulties with communication. This, in turn can lead to frustration, low self-esteem, withdrawal and social isolation (Chen, 1994). Nearly two out of three Britons with hearing loss feel socially isolated because of their condition (Specsavers, referenced by Age UK, April 2015).
		More likely to be 65 and over and may have an additional physical impairment (Populus, March 2015). Barriers related to those characteristics are also relevant here.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	Those with profound deafness usually cannot access call centre options using Minicom or textphone. Deaf people report that call centres regularly hang up when they call via the text relay service and hard of hearing people say that requests to speak more slowly are often ignored (George, Graham, Lennard, 2011).
	Difficulty preparing for installation	As 30 per cent of deaf people using British Sign Language (BSL) have mental health problems, primarily anxiety and depression (Mental Health Foundation, January 2007), may have difficulty preparing emotionally for installation. However, the number of deaf signers who use BSL as their first language is estimated at 22,000 in England and Wales and 13,000 in Scotland (Office for National Statistics, August 2013; *National Records of Scotland*, 2011 Census, September 2013), although many people without hearing impairments also use BSL. Figures from the British Deaf Association suggest that on any day up to 250,000 people use BSL because they have family members, friends or colleagues who are deaf (British Deaf Association, referenced by Department for Work & Pensions, *Accessible communication formats*, August 2014).
Having the smart meter installed	Difficulty on installation day	May have difficulty understanding the demonstration (confidential *Smart energy for all* consultation response).
		The installer should tailor the installation e.g. demonstrations and literature provided (SMICoP, February 2015) appropriately.

Severe or profound deafness

Definition: Severe or profound deafness, i.e. the quietest sounds people with severe deafness can hear are 70 decibels, i.e. cannot hear normal conversation. May lip-read, have a hearing aid, or use sign language (Action on Hearing Loss)

Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	May require alternative communications formats. May be limits in the extent to which can take control of their energy consumption: severely and profoundly deaf people are four times more likely to be unemployed than the general population (Action on Hearing Loss, July 2011).
	Difficulty choosing the right deal or supplier for them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

Social housing tenant		
Definition: Accommodation that is rented from a council or local authority, or from a registered social landlord, housing association, housing co-operative or charitable trust (Census)		
Hearing about smart meters	The message doesn't reach them	Reduced consumption of BBC TV and radio compared with the national average. Slightly lower out of home and online media consumption (TGI).
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Social resonance: 43 per cent of social tenants live alone (Department for Communities and Local Government, July 2014). May have chaotic lives, juggling multiple demands: 34 per cent have children at home (TGI) and 16 per cent of social housing residents are lone parents (Department for Communities and Local Government, July 2014). Landlord/tenant will need to be engaged. 80% of social housing tenants anticipate remaining renting in the social sector (Department for Communities and Local Government, July 2014).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty preparing for installation	Twenty one per cent of social renters have been accepted as homeless prior to being housed (Department for Communities and Local Government, July 2014).
Having the smart meter installed	Difficulty on installation day	Landlord/tenant will need to be/may want to be present on day of installation.
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty using the information to take control of their energy usage	Tenant may not be engaged if the landlord has arranged installation. Although social housing is generally the most energy-efficient housing type, (Department of Energy & Climate Change, *Annual fuel poverty statistics report*, June 2014), there may be limits in the extent to which can take control of their energy consumption: 23 per cent of social renting households have a household reference person (HRP) working full time (compared with 61 per cent of private renting households and 54 per cent of owner households). 12 per cent are in part-time employment (Department for Communities and Local Government, July 2014). Two thirds of social renters received housing benefit to help with the payment of their rent in England in 2012/13 (Department for Communities and Local Government, July 2014).
	Difficulty choosing the right deal or supplier for them	Non-switchers are most likely to include those who rent their homes (Ipsos MORI, June 2014). The poorest consumers have a lower switching rate than the wealthiest – 13 per cent compared to 17 per cent. Around half of those in the poorest/most vulnerable social groups have switched after being contacted directly by an energy supplier, compared to around one in five of the wealthiest (Consumer Focus, January 2013). Tenant may not realise that they can switch (if they are the bill payer).

Social/behavioural impairment

Definition: Referenced in DWP's Family Resources Survey, but without a definition. Examples include autism, attention deficit disorder, or Asperger's syndrome

Hearing about smart meters	The message doesn't reach them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	The message isn't adequately understood	Between 44–52 per cent of people with autism may have a learning disability (Emerson, Baines, The estimated prevalence of autism among adults with learning disabilities in England, 2010; Fombonne, Quirke, Hagen, 2011) so understanding may be an issue.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	Individuals on the autistic spectrum are often unable or unwilling to participate in situations which rely upon social or verbal interaction (Hardy, referenced by AbilityNet, April 2015). For many people with an autism spectrum disorder (ASD), face-to-face contact with new people is often stressful (The National Autistic Society, 2008). People with ASD may fear change and planning for the future (The National Autistic Society, 2008).
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	People with autism may find it hard to self-organise and plan, for example, cannot structure their day without support (The National Autistic Society, 2008). People with autism may have an absence or impairment of comprehension and use of language and non-verbal communication (The National Autistic Society, 2008).
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	May struggle to remember their appointment (The National Autistic Society, 2008). People with an ASD have difficulties with both verbal and non-verbal language, that is, using and understanding words and body language in order to communicate with other people. Many will need extra time to process what has been said to them (The National Autistic Society, 2008).
Using and benefiting from smart meters	Difficulty using the smart meter display	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	Difficulty understanding the information provided on the smart meter display	Between 44–52 per cent of people with autism may have a learning disability (Emerson & Baines, 2010, *Health inequalities and people with learning disabilities in the UK*, Fombonne, Quirke, Hagen, 2011) so comprehension may be an issue for some.
	Difficulty using the information to take control of their energy usage	Only 15 per cent of people with autism are in full time employment (The National Autistic Society online, accessed June 2015), so there may be limits in the extent to which they can control their energy consumption.
	Difficulty choosing the right deal or supplier for them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.

Speech impairment

Definition: The inability of a person to speak clearly at a normal pace and rhythm and to understand someone else speaking normally in their own language (Equality and Human Rights Commission)

Hearing about smart meters	The message doesn't reach them	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
	The message isn't adequately understood	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Making a decision to say yes to a smart meter	The message doesn't resonate in the context of their specific circumstances	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Being contacted about installation and setting it up	Difficulty arranging an appointment with their supplier	May have difficulty/lack confidence in speaking to their energy supplier in order to arrange an appointment. Voice-activated systems may be a particular barrier (George, Graham, Lennard, 2011).
	Difficulty preparing for installation	We have not found sufficient existing insight to determine whether this characteristic presents a barrier at this point in the journey.
Having the smart meter installed	Difficulty on installation day	Communication with the installer may be an issue (confidential *Smart energy for all* response).
Using and benefiting from smart meters	Difficulty using the smart meter display	May have difficulty/lack confidence in speaking to their energy supplier in order to arrange an appointment.
	Difficulty understanding the information provided on the smart meter display	May have difficulty/lack confidence in speaking to their energy supplier in order to arrange an appointment.
	Difficulty using the information to take control of their energy usage	May have difficulty/lack confidence in speaking to their energy supplier in order to arrange an appointment.
	Difficulty choosing the right deal or supplier for them	May have difficulty/lack confidence in speaking to their energy supplier in order to arrange an appointment.