



Consumers' views of Smart Metering
Report by FDS International
J7781/ad/sl



a Munro group company

Management summary

Twelve focus groups and ten family groups were run to explore customers' requirements, hopes and concerns regarding smart energy meters.

About a third of participants claimed to have heard of smart meters and while their understanding of what they are and do was inexact, most of these gave answers along the right lines. They focussed on the energy saving/monitoring elements rather than remote readings.

Encouragingly, perceptions of smart metering were positive and there appeared to be extremely few, if any, negative misconceptions that could be awkward to correct. When the concept of smart metering was introduced and discussed in the groups, people generally considered the use of the term 'Smart' to be an appropriate phrase to use when monitoring energy usage and felt that 'Smart' fitted the concept of the product.

Overall the concept generated less enthusiasm than might have been hoped but fewer concerns than might have been feared.

Typical reactions were cautiously positive – lukewarm rather than enthusiastic, although some were genuinely enthusiastic. A small minority of mainly older adults were sceptical and/or slightly nervous and viewed the prospect of having a smart meter and In-Home Display installed with a mild degree of trepidation.

In terms of attitudes towards smart meters and In Home Displays there were some differences between those for whom energy bills were, and were not, a concern. There was slightly more interest in smart meters among those for who bills were an issue. But these differences were not that consistent between groups.

There appeared to be particular potential for In Home Displays to help households save money where usage was higher than household members felt it could be, but where they were unsure of the best means of cutting back. Some of the best informed respondents embraced the principle of smart metering but felt they were already doing what they needed to save energy. In contrast, in some households participants currently lacked the will or motivation to make lifestyle sacrifices to save money.

Remote reading

The prospect of energy companies being able to read meters remotely was viewed favourably by the overwhelming majority of participants – provided it worked effectively in practice and faults could be easily identified.

In several groups, mainly in Scotland and the north east, participants pointed out that an undesirable consequence of smart metering would be that meter readers would be unemployed.

Several participants expressed doubts as to whether smart meters would prove reliable, and for some, those doubts were exacerbated by the fact that meter readers would not be making visits to take readings and check that meters were working properly. More people expressed doubts as to the reliability of the meters than voiced concerns about issues of data privacy and how the data collected might be used.

In fact in all sessions people identified clear, long-term benefits in remote reading:-

- more modern approach
- no estimated reading
- accurate billing
- no need for a meter reader to visit the home or for customers to take their own readings.

The degree of benefit perceived by respondents was largely dependent on the degree of inconvenience they experienced as a result of the current arrangements of meter readers visiting.

While reactions to remote readings were overwhelmingly positive the potential benefits generated no excitement.

In-Home Display – Traffic Lights

Reactions to the In-home Display were more ambivalent but it generated more interest, even excitement, as it was seen to potentially help people save energy and hence, money.

Many people felt the IHD would give them knowledge to help them reduce their energy usage and make savings. These savings could help them reduce their energy bills over the long-term. However, even some of those who expected the device to give them quick wins were sceptical as to whether the device would help them make new, additional savings after they had had one for some time.

One of the possible features of the In Home Display was a traffic light system or a variant of it, showing green and amber for low/normal electricity usage and red at times of unusually high usage.

Reactions to this were mixed. Some embraced this idea readily, seeing it as providing potentially useful information. Some were less positive arguing that any gains in knowledge would be quickly achieved and minimal, and they were sceptical as to whether it would offer any real long-term benefits.

While some accepted the principle of a traffic light display a minority became engrossed in the detail of how it would be calibrated and whether the display would be geared to their own consumption rather than households in general or similar households. They tended to be cautiously positive in principle, provided the details were worked out to their satisfaction.

Overall reactions to the Traffic Light Display were sufficiently positive to suggest this should be a key element of the In Home Display.

However, negative reactions came from adults concerned that older, vulnerable adults could be frightened into turning off or down appliances that they need to stay warm and healthy or to experience a degree of comfort. Some were alert to the paradox of encouraging older people to stay warm during the winter while installing In-Home Displays that might discourage them from doing so.

While most of the over 60s surveyed suggested they would be perfectly comfortable with this type of display a couple of older women did express anxiety on this point indicating that the instructions for the traffic light display need to include reassurances for older people.

In Home Display – Numerical Display

Another potentially key element of the In Home Display is the numerical display.

Virtually everyone wanted data displayed to be expressed in pounds and pence as they would be more likely to be understood and taken notice of. A minority also wanted kWh to be shown and a couple pointed out that time series data would be more useful in kWh than pounds due to price changes.

Ideally people wanted a single display to be capable of showing gas and electricity consumption – with the customer able to switch between them at the press of a button. Some felt that the IHD had far greater relevance for electricity than gas as they used a wider range of electrical appliances, but others felt it was at least as important to show gas consumption.

In terms of precisely what information should be shown some wanted a better idea of what energy they were using and what individual appliances were using. So they wanted something that showed consumption by appliance, or failing that, energy usage per hour at that moment in time, and they could experiment by turning appliances off and on.

Others were more interested in preparing themselves for their next payment and the most useful display for them would be linked to payments:-

- so usage in £ since last bill for cash/cheque payers
- whether ahead or behind of usage with direct debit payments
- how much they had left before needing to top up again for pre-payment meter customers.

Pre-payment customers could obtain this information from their smart meter but still liked the idea of seeing it on an easily accessible display.

A minority wanted to see graphs of usage (such as daily usage or Year to Date versus previous year) but fewer people expressed interest in graphics than wanted something to show what individual appliances were using.

Installation/instructions

Those who had had meters exchanged in the past had encountered few problems and few concerns were expressed about the installation process for smart meters.

People wanted the installer to demonstrate how to use the In-Home Device, but they also wanted concise, clear printed instructions in layman's terms explaining the features of the display and how it could be used. There was little appetite for detailed instructions and some would be deterred from looking at instructions of more than four pages.

However, it was also apparent from the research that with displays in pounds and pence people will need to understand why the figures on the display may not match exactly to billing information.

And older people especially need to be reassured that a red light does not necessarily mean they need to turn appliances off or down.

Some said they would welcome the opportunity to receive energy efficiency advice from the installer or from a colleague at a subsequent visit. But many were resistant to the idea of receiving advice as a result of having a smart meter installed – and were particularly keen NOT to have an energy company representative trying to sell them products or services.

National Rollout

The vast majority of respondents did not care enough about the smart meter and display to worry as to whether they would be among the first or last to have a smart meter installed.

They expressed a variety of views about how the national rollout should be organised, some arguing particular groups should be prioritised, others suggesting more pragmatic approaches.

Those who felt certain groups should be prioritised usually selected those they felt had more to gain from having a smart meter and display suggestions including:-

- those who actually request it (as they were likely to use it)
- those with high energy bills
- the fuel poor
- those on low incomes/financially vulnerable
- families
- pensioners.

Many suggested families had most to gain, as their bills were likely to be high and the In-Home Display could act as an educational tool for children/teenagers.

Others argued for an efficient, cost-effective approach with certain regions or postcodes having meters installed before others. This reflects fairly widespread concerns about the cost of the initiative and whether customers would end up paying, even if indirectly.

The fact that views on this subject varied and did not appear to be held very strongly should mean the Government could adopt the solution that best meets its own requirement or preferences. This could mean giving energy companies a degree of freedom in choosing how to roll out smart metering to their customers.

Opt out

There were a few spontaneous suggestions that people should be able to opt out of having a smart meter installed. But these comments were made, not after the idea of the smart meter had been introduced, but after people had discussed the In Home Display. It was not concerns about remote reading that prompted suggestions that people should be able to opt out.

People who argued in favour of opt out tended to react negatively to the idea of the IHD rather than the smart meter. They did not expect to benefit from the IHD and were not keen on having someone coming to their home to install the smart meter and IHD.

Therefore, reassurance that they do not have to use their IHD if they choose not to, may appease these customers.

Conclusions/Recommendations

- There are elements of smart metering that are of minimal interest to most customers (such as the way the national rollout is organised) which gives the Government a degree of freedom in this regard. So people would not be unhappy if this was organised geographically – so customers in some parts of the country received them before others – nor by some other system, such as priority being given to those with high bills or those who proactively request smart meters.
- One area of concern, particularly among the more technically-minded, was how and whether smart meters would work. For this initiative to be viewed as a success, it is a basic requirement that smart meters should not be any more prone to faults than existing meters, and faults should be easy to spot, diagnose and rectify. Some initial teething problems will be tolerated, even expected, but an effective long-term solution must be found.
- There was widespread resistance to and concern at the idea of paying for an IHD. This reluctance was greatest among those who did not expect to make savings as a result of having an IHD, but even some of those who did expect to make quick savings suggested energy companies should pay for the devices out of savings made through not employing meter readers. Most people will not want to pay directly or indirectly for an expensive IHD. It appeared that most would sacrifice a little functionality if it meant the devices were free, and there should be wariness regarding imposing requirements of the IHDs that will add significantly to their cost.
- Nevertheless people would ideally like all in-home displays to:-
 - have information on gas and electricity on the same device
 - though recognising this may not be possible if they had different suppliers
 - have a simple visual display, such as the traffic light system, to warn of high usage
 - have numerical display of information in pounds and pence
 - be portable so it could be moved from room to room, so it might be battery operated or have a battery option
 - be physically compact and have a reasonably attractive design, so it would be kept on display
 - have a screen large enough to display clear, easy to read, accessible information.
- A minority of customers are likely to be willing to pay for additional functionality and the most popular extra function for these customers is likely to be measurement of energy usage of individual appliances.
- While some really like the idea of flexible range of graphs to display energy usage, there was insufficient support for this function to suggest it should be a basic requirement of smart meters, but nor did it appear to be a function people would be keen to pay more for.
- Clear, concise user instructions are essential and these will need to be carefully worded, particularly to ensure that any traffic light type system does not cause undue alarm to vulnerable adults, as a frequently voiced concern of the scheme is that vulnerable adults will be frightened into turning off necessary appliances.

- With many expressing concerns about the cost of implementing the scheme, there will be considerable disappointment if the scheme is not proven to help people reduce their energy bills.
- Instructions will also need to explain why the pounds figure on their display may not tie in perfectly with their bill.
- Far more participants expressed doubts about costs, reliability and the devices causing problems for elderly people than voiced concerns about data privacy and how the data collected might be used.
- Therefore those responsible for rolling out the scheme and communicating with customers need to pay particular attention to issues of cost, reliability and how the devices will help, rather than alarm vulnerable adults.

- People also wanted to be able to contact their supplier if they had queries about their IHD or smart meter. During the national rollout, companies should learn from the experiences of the initial recipients of smart meters to ensure they have appropriate numbers of trained staff available to answer queries as the numbers ramp up.
- There was some suspicion regarding the motivation of energy companies, partly because some customers could not see why they would want to help their customers reduce their energy usage.
- Therefore, it would probably benefit customers – and possibly the energy companies themselves – if the Government's desire to reduce energy consumption/CO2 emissions were made more explicit in material concerning smart metering.

Stephen Link – Research Director
Amar Dhudwar – Research Manager

April 2010

Contents

Management summary i

1. Introduction 1

2. Methodology 4

3. Current Awareness of Smart Meters..... 8

4. Views of remote reading of meters 10

5. In-home Displays..... 17

6. Customer typologies 34

7. National Roll-out..... 36

8. Installation Process 41

Appendices

A – Case Studies

B – Board Graphics

C – Topic Guides

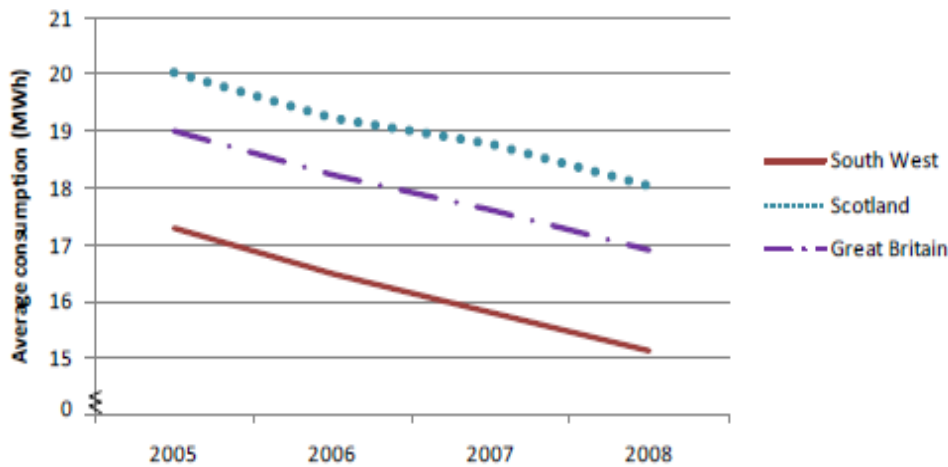
D – Self-completion questionnaire

1. Introduction

Background

Installation of smart meters has been adopted by the Government as a way of helping consumers have more control over their energy use and spending, while also helping meet environmental and security of supply objectives. The programme aims to install smart meters in all homes in Britain by 2020.

Households in Britain are responsible for 26% of the UK's total energy use and carbon emissions. Latest statistics from DECC 1 show that domestic consumption has actually fallen in the most recent years with consumption levels now below those of 1998, after a peak was reached in 2004. Gas consumption in particular, has fallen as the following chart shows²:



Electricity consumption has fallen too. The drivers of this downturn include high fuel prices, relatively warm weather and also actions by consumers, including making physical improvements to their homes such as insulation, and changes in behaviour such as turning electrical equipment off instead of leaving on stand-by.

¹ Source: Department of Energy and Climate Change - Digest of UK Energy Statistics Annex, Table 1.1.5

² DECC Energy Trends December 2009

Greater change is required, however, to ensure Britain is less exposed to risk in terms of energy supply and emissions are reduced in line with targets. Direct feedback through smart meters has been shown to effect reductions in energy use of 5 to 15%³. Much of this reduction is achieved through consumers seeing the direct impacts of their day-to-day behaviour at home – asking people to make reductions in energy use with only traditional utility bills to help, is like *asking them to economise on a weekly grocery shop without providing individual product prices* [Kempton and Layne 1994].

The problem is compounded by many energy customers having a poor understanding of how their bill is made up, for example, not understanding the two tier pricing structures companies use to cover the fixed costs of supplying individual households. Feedback also encourages investment in better energy saving equipment and micro-generation. DECC estimates that the introduction of smart meters will save consumers c£5.98 billion over 20 years.

Aims and objectives

In October 2008 the Government announced its intention to mandate a roll out of the installation of around 50 million electricity and gas smart meters to all of Great Britain's 26 million homes by 2020. Following consultation, the Government has set high-level smart functionality requirements for domestic electricity and gas meters, and announced the initiation of a central Smart Metering Implementation Programme.

The first phase of the Implementation Programme has been led by Ofgem and will prepare the way for the start of the mass roll out of smart meters. The first phase of this work will be concerned:-

- with defining the scope and key principles of the smart metering solution; and
- these principles will inform the design parameters.

These design parameters will guide the preparation of detailed specifications and commercial and regulatory arrangements.

³ The effectiveness of feedback on energy consumption – Review for DEFRA by the Environmental Change Inst. University of Oxford

Research objectives

In order to define these key principles and detailed specifications, Ofgem required research with consumers to ensure that their priorities including worries, needs and demands are heard and taken into account in the roll out of smart meters. To this end, this research has essentially been a 'state of the nation' piece to tap into customers' initial reactions to the idea of having a smart meter installed in their home.

The **overarching aims of the research** therefore were to understand customers' initial reactions to:-

- the idea of smart meters;
- having a smart meter installed in their home as part of the national roll out.

The **more detailed objectives** of the research can be divided into four groups. These included:-

- 1. Overall awareness of smart meters**
 - Awareness of smart meters and spontaneous views of their benefits or disadvantages
 - Prompted reaction to smart meters (following a brief description)
- 2. Reaction to having one in their own home**
 - Would they want one in their own home?
 - An exploration of these reactions - the relative importance of benefits and concerns
 - How might these concerns be overcome
- 3. Overall awareness of the national roll out**
 - Spontaneous and prompted awareness and knowledge of the national roll out
 - Perceptions of benefits or concerns about the national roll out including specific concerns
- 4. Detailed view of the national roll out**
 - Who should be the first recipients in the national roll out?
 - Who should install the meters?
 - Should particular groups be treated differently and/or prioritised

2. Methodology

The overall qualitative methodology was based on a mixture of traditional focus groups and 'household' groups. These groups covered both urban/rural areas and various life-stages and financial situations. In total the research conducted:-

- 12 focus groups - 2 were held specifically with pre-payment meter customers
- 10 household groups
- 2 individual depths were included where recruitment of off-gas grid customers to the focus groups was difficult.

Household groups were undertaken because every member of a household can consume energy independently, and so smart meters could impact on all members and not just the bill payer. By including these groups, the researchers were able to:-

- probe the household view of smart meters and identify the perceived benefits and downsides; and
- by talking to all members of a household, the research gained additional insight into detailed personal views of smart meters.

All focus and household groups were audio recorded, and two focus groups were also video recorded in a studio viewing facility. The focus groups were 90 minutes in duration and the household groups 60-90 minutes. All groups were either transcribed verbatim or a full note was written up by the moderator. Research ran from 10 to 31 March 2010.

Sample

FOCUS GROUPS

Region	Life stage	Financial situation	other
England North – Urban	Under 40 single households	Fuel bills not a concern	
England North – Urban	Family (i.e. children at home)	Fuel bills are a concern	
England North – Rural	63+ yr old single/couple	Fuel bills not a concern	Included some with no mains gas
England South – Urban (Studio)	Under 40 not single household (flat sharers)	Fuel bills are a concern	
England South – Urban (Studio)	Family (i.e. children n at home)	Fuel bills not a concern	
England South – Rural	40 + single household (included several 70+)	Fuel bills are a concern	Included some with no mains gas
Wales - Urban	Under 40 single households	Fuel bills not a concern	
Wales – Rural	40+ couple (no children at home)	Fuel bills are a concern	Included some with no mains gas
Scotland – Rural	Under 40 not single household	Fuel bills not a concern	Included some with no mains gas
Scotland – Urban	40+ single household	Fuel bills are a concern	
North - Urban	Any	Any	Prepayment meters
South - Rural	Any	Any	Prepayment meters

HOUSEHOLD INTERVIEWS

Region	Life stage	Financial situation
Wales – Rural	Family with Young Children 9-12	Fuel bills are not a concern
Wales – Urban	Family with teenage children	Fuel bills are a concern
Herts – Rural	Family with Young Children 9-12	Fuel bills are a concern
Herts – Urban	Family with teenage children	Fuel bills are not a concern
Herts – Rural	Family with Young Children 9-12	Fuel bills are a concern
Herts – Urban	Family with teenage children	Fuel bills are not a concern
North England – Rural	Family with Young Children 9-12	Fuel bills are not a concern
North England - Urban	Family with teenage children	Fuel bills are a concern
London – Urban	(70+ age bracket)	Fuel bills a concern
North – Urban	(70+ age bracket)	Fuel bills are not a concern

Urban/ Rural locations

Four of the focus groups were held in rural locations/small towns and included off-gas grid customers. This was particularly important as rural energy customers can have a different perspective to urban customers – for example they may expect to be included in the latter stages of the national rollout.

Energy provider

Each focus group covered a mix of energy providers with a maximum of five customers of any company in a single group.

Regions

Ofgem has a remit to manage the first stage of the smart metering programme across the whole of Britain. Energy suppliers still have a regional skew in their customer base and views on smart metering may be dependent on the attitudes customers hold about their energy supplier. We covered a range of regions within Britain:-

- Scotland (Edinburgh and rural west Scotland)
- Wales (Cardiff and rural south Glamorgan)
- North East England (Newcastle and rural areas/small towns – Blyth)
- South East England (London and rural and urban parts of Hertfordshire).

Financial situation of the household

The recruitment of respondents was also based on whether or not fuel bills are considered to be a significant concern. Attitudes towards fuel bills were included as these respondents could bring different perspectives on smart metering. In general, fuel bills problem were more of a concern for poorer than more affluent households.

Life-stage/ household makeup

The life-stage/ household status was of particular importance for this research. The groups covered the following range of life-stages:-

- under 40 single households
- under 40 not single households (including a London group of flat sharers)
- 40+ couples (with no children at home)
- 40+ single households
- families (with children living at home)
- 63+ single/couple households.

Pre-payment meters

We also included 2 pre-payment meter households within the sample as this group of consumers can be very different to other households not only as a result of being more likely to be fuel poor, but because they already have a quasi-smart meter in their home. Therefore they have much more direct feedback than most households of the impact of their behaviour on their energy expenditure.

Household groups

As explained earlier, 'household' groups were included in order to explore the other members of the household perspectives alongside the view of the bill-payer. The research included 10 **household groups** with:-

- families with young children aged 9-12
- families with teenage children
- aged 70+ households.

3. Current Awareness of Smart Meters

Key points

- About one in three claimed to have heard of smart meters.
- Those aware typically identified the monitoring aspect of the in-home display, rather than the ability for suppliers to take remote readings and provide accurate billing through the smart meter.

Awareness and understanding of smart meters will grow during 2010 as energy companies communicate with their current and potential customers about smart metering.

Most of the research was completed before a spate of positively-worded articles about smart meters and in-home devices appeared in the national press in early April 2010. A npower TV campaign also featured a version of the traffic light display and made references to 'smart'. Therefore, awareness and understanding of smart metering could be fairly fluid.

Much of the publicity and advertising surrounding smart metering has focussed on the possibilities opened up by the In-Home Display which will help people monitor and reduce their energy usage.

Reflecting this, when, at a very early stage in the focus groups, participants filled in self-completion questionnaires about their understanding of 'Smart Meters' hardly anyone correctly identified the key function of energy supplies being able to take remote readings.

About one in three respondents thought they had heard of them, typically through their own energy supplier or another provider or through press or TV coverage and there were mentions of a News of the World offer and a GMTV feature.

While understanding of Smart Meters was inexact, applications suggested or guessed were generally along the right lines and included:-

- shows how much energy a particular device is using and costing (this being one of the more common suggestions)
- meter that monitors your consumption
- helps with saving energy and money
- shows how much energy has been used in pounds and pence
- similar to a pre-payment meter
- can provide cheaper energy
- shows when you are spending too much money on energy.

Awareness of Smart Meters is likely to rise during 2010 so this represents a snapshot in time.

Reassuringly, people had positive perceptions and expectations of Smart Meters so there were no widespread negative misconceptions that could make it more difficult to persuade people to accept them. People were encouraged by the term 'smart' and expected smart meters to help energy customers save money.

Although spontaneous awareness of what a Smart Meter was was pretty patchy, respondents typically considered the use of the term 'Smart' to be an appropriate phrase to use when monitoring energy usage and later agreed that 'Smart' fitted the concept of the product.

Groups felt that 'Smart' was appropriate because it made reference to the advanced technology of the meter and some respondents felt it fitted in well with other similar products in the market with the same brand, e.g. Smart phones, Smart cars – so essentially a helpful, compact and economical product.

"... but Smart, it's an all-rounder; it gives you the gist of everything and it sounds like it's going to be smart and help you".

(Female, Under 40, Rural Wales and fuel bills are a concern)

"I think it's becoming a recognised terminology. You get Smart cars, Smart phones and things like that and I think it does suggest a level of electronic expertise. This is probably the thing that they're trying to say. In the same way as i-phone and i-pod and that, I think Smart means something now".

(Mother from household group with family with teenage children, Cardiff and fuel bills are a concern)

4. Views of remote reading of meters

Key points

- The prospect of remote meter readings was viewed favourably by most respondents provided this was a smooth process that worked effectively and ensured that any faults that arise could be easily identified and fixed. Reliability is crucial.
- Customers were generally relaxed about the idea of energy suppliers having access to more accurate and up-to-date usage data.

Current arrangements

Before and after introducing the remote reading functionality of smart meters moderators quizzed participants about their views and experiences of the current situation where meter readers visit three or four times a year.

Some felt remote readings were overdue and pointed out that telecoms and water meters could be read remotely.

“It is old school isn't it? The meter reader coming to you to read the meter. It's a very old way of doing things. The times now, it's like living in 1950 still”.

(Male, London, Under 40, Fuel bills are a concern)

Where meter readers did not need to gain entry to a customer's home to take readings, their visits presented no or very little hassle or inconvenience to the customer. It also meant estimated readings were less likely. Where meters were outside the home or in buildings such as coal stores outside the main dwelling, sometimes customers struggled to check that readings taken or used to calculate bills were accurate.

Some did not like having to let meter readers into their home. For some, it was the inconvenience they objected to, the meter reader coming round while the customer was cooking or eating meals with some complaining that the meter readers always appeared to visit at awkward times.

Some respondents, mainly older women, said they did not like letting strangers into their homes and some of the younger participants said they had mothers or other relatives who felt that way.

There were also a few who talked about receiving notification that a meter reader was going to visit or revisit on a particular morning or afternoon and they then stayed in to ensure their meter was read and they could avoid receiving a bill based on an estimated reading.

Some were reluctant to provide their own meter readings:-

- the meter was in a locked 'cupboard' on the outside of the house and they could not easily locate the key or the meter was in another difficult to access location.

"One of my meters is outside the house in a store shed. I have to go physically out in the road into the store shed and sometimes I can't read it because it's dark and that's the problem".

(Male, Rural Wales, 40+ couple, Fuel bills are a problem)

- they were not confident in their own ability to read their meter
- they could not be bothered.

But others were happy to provide their own readings and did so:-

- as part of a regular arrangement with their energy company
- when a card was pushed through their door advising them a meter reader had called/requesting a reading
- when they checked an estimated reading on a bill or statement and found it too high so wanted to pay a lower amount (and while there was no evidence from this research this tactic is probably used by some customers primarily to delay payment).

"When the bill comes then we ring them up and say look, and they say give us the reading, they send another bill and you pay that instead of the estimated one...you are not playing catch up, you are not getting caught unawares".

(Female, Rural Wales, 40+ couple, Fuel bills are a concern)

For many customers, as long as the meter was accessible and easy to read, providing their own readings was regarded as, at worst, a minor inconvenience.

But some respondents said they really disliked receiving estimates. They disliked the inconvenience of having to check their meter (and possibly take actions) in response to an estimated meter reading that appeared to be inaccurate.

Some checked their meter but were not happy doing so. Others declined to check their meter – possibly because it was awkward to access and read – and usually ended up paying more than they should have. While people felt estimates were more often too high than too low there was also concern that if people paid too little as a result of an underestimated bill they may then be confronted by a large bill. (In fact other research among pre-payment meter customers suggests this is sometimes the reason for people switching to a pre-payment meter).

Introduction of smart meters

At this stage, respondents were shown a description of smart meters, and told that these would be introduced into GB households.

HANDOUT 1



Traditionally, electricity and gas meters sit under your stairs or in the garage and are only disturbed when the meter reader comes to take a reading – usually once every quarter.

Smart meters are an electronic version of the meter you currently have in your home. They are 'smart' because they are able to communicate with your suppliers by sending and receiving information remotely. Smart meters will therefore stop the need for meter readings to be done manually via a visit.

Reactions were positive and the idea of energy companies being able to take remote readings was welcomed.

It was seen to be more in line with the way telecom companies charge their customers and how water companies charge their metered customers.

It removes the inconvenience of meter readers calling or customers being obliged to provide their own reading, and while some regarded this as no or only a very minor inconvenience, this was regarded as a significant inconvenience or hassle by some.

Billing could be more accurate, not simply because estimates were no longer necessary, but it reduced the possibility of human error by meter readers or customers reading meters themselves.

It eliminates the need for estimated bills/statements:-

“No more estimated bills, you would have confidence that you were getting bills for the right amount of money”.

(Male, Newcastle, Under 40, Fuel bills not a concern)

“No estimates. That’s the biggest one for me. I don’t want people guessing how much money I owe them”.

(Male, Newcastle, Under 40, Fuel bills not a concern)

Several groups picked up quickly on there being no further requirement for meter readers to visit homes on a regular basis.

Some saw this as a sensible efficiency, removing unnecessary costs for the company and unnecessary inconvenience for the customer. For these participants, their biggest concern was making sure the energy companies passed at least part of the cost savings on to customers. The potential cost savings gained through no longer employing meter readers partly assuaged the concerns of some participants that the whole scheme would cost (or waste) too much money.

However, there were also numerous comments, particularly among poorer adults and those living in the North East England and in Scotland, who were concerned about thousands of meter readers losing their jobs.

Their concerns were partly offset by the gradual introduction of smart metering up till 2020 so it was not as if thousands would lose their jobs overnight and the fact that in the first few years at least, the installation of smart meters would create a lot of work and new jobs.

While most felt eliminating the need for regular meter reader visits was a genuine benefit a few suggested an important function of a meter reader was checking that the meter working correctly (although some disagreed that a meter reader would know this simply by looking at a meter).

One of the most common concerns expressed about smart metering was whether faults would occur, and how anybody would realise that the Smart Meter had developed a fault or was not working properly.

"How would you find out if it's got a fault? It might be going too fast or whatever and there's a fault. How are we going to find out? When you get a bill at the end of the year that's twice as much as what you generally pay?"

(Male, Rural North East, 63+, Fuel bills not a concern)

There were suggestions for a safety back-up device on the in-home display, such as a flashing light or message, alerting them to a fault.

People did not really pick up on the possibility that as more frequent readings were taken, a fault on a smart meter might be detected much more quickly than a fault on a conventional meter.

Many respondents said they made a point of checking their meter readings and would continue to do so with the introduction of a smart meter but some said that once they had checked the first couple of readings they would assume the smart meters was correct unless they had reason not to believe it.

Some, mainly male participants in this research appeared to be technically minded and were very interested in the technology that would be used to transmit data and depending on the technology wondered how it would cope with:-

- power cuts or surges (if electrical)
- rural areas where mobile phone signals were weak or non-existent (if relying on mobile phone network to transmit signals).

Reliability

A few were dubious as to whether the system would work effectively consistently and reliably. Reliability is crucial. The positive comments about remote readings are dependent on the technology working and the possibility of faults occurring was one of the more widespread concerns expressed in this research.

At an early stage in most discussions concerns were expressed about the cost of this initiative, and these concerns were picked up on by other participants.

While in virtually every group, concerns about costs, faults and the reliability of this approach were raised spontaneously there were far fewer concerns or queries raised about issues such as data privacy and how energy companies might use smart meters and the information this gave them.

Remote Functionality – Use of Information

A man in the Hertfordshire pre-payment customer group (who was generally positive about the initiative) was one of the few to spontaneously raise the issue of how energy companies might use the information. He wondered if his energy company might make changes remotely such as adjusting the proportion of money put in a pre-payment meter that actually went towards energy rather than paying off a debt.

“If you look at TV boxes now, signals it sends out, they can actually change your settings, so could they change that, could they change anything to do with your supplier before you know about it? Can they change what you’re using?”

He raised this more as a subject of interest rather than something that greatly worried him and his concerns, were not shared by other pre-payment meter customers, some of whom argued energy companies were already able to make such adjustments.

A couple of direct debit payers in the north east wondered if energy companies would adjust a customer's direct debit payments upwards or downwards more frequently if they could see the customer was spending a lot more or less than expected.

This was raised more as a subject of interest than alarm. The idea of an energy company adjusting payment more frequently was not necessarily seen to be a bad thing, provided seasonal patterns were taken into account, as it reduced the likelihood of people paying more than they needed to or being faced with a major adjustment to their payments.

Data privacy issues were not generally raised in the early stages of the discussion but when the potential benefits and drawbacks were being discussed later there were isolated unprompted references to 'Big Brother':-

“Well it's another somebody watching you really isn't it. It's another invasive something that's there and not everybody wants that really”.

(Male, Rural Wales, 40+ couple, Fuel bills are a concern)

"I'd want some form of guarantees from them about things like privacy and what they're going to do, how information's being transmitted, who's paying for it, whether it's tamperproof. It's very mechanical at the moment. You could look at a mechanical clock, you can see these numbers, but you start automating things you want some form of guarantee that they're not going to mess around with it".

(Male, Cardiff, Under 40, Fuel bills not a concern)

In groups where individuals picked up on data privacy issues these concerns were not echoed or supported by the majority of other participants.

As people had not picked up spontaneously on issues of how data might be used, in a couple of the focus groups moderators suggested the government and/or energy companies might use smart metering data to take action in an energy crisis.

This idea was greeted with acceptance rather than horror in this exercise as people felt extreme times might justify measures that in normal times would be unacceptable.

"If it had to be shared equally. You've got some people who are not controlling the amount of energy they're using. They're really wasting it. It's hours and hours on the highest peaks, and nothing is being done about it. There are some people who aren't using much at all. Regardless of how much you're paying for the energy, there are some people who are wasting too much energy. I'm talking about those extreme people".

(Female, London, Family, Fuel bills not a concern)

Similarly, when in a couple of groups, the idea of energy companies being quicker to disconnect customers who failed to pay bills was raised this notion was not greeted with alarm, as people had limited sympathy for these customers and they were sure companies would still need to follow set procedures before disconnection.

"They would only disconnect you if you are not paying your bills wouldn't they, so you'd expect it really".

(Female, Rural Wales, 40+ couple, Fuel bills are a concern)

Some argued that if a customer had an In-Home Display they would be better informed about their usage and able to discuss their energy bill and consumption with their energy supplier from a more informed standpoint:-

"You'd ring them up and you'd probably get more dialogue with the company..."

You'd be clued up more on what you are spending really that's the nuts and bolts of it which is good".

(Male, Rural Wales, 40+ couple, Fuel bills are a concern)

A few respondents thought having access to more usage data may give suppliers licence to put prices up, given they will have access to such detailed and accurate information.

"They might say we've got all this information, now we're going to get more money by putting the prices up in this period".

(Male, Newcastle, under 40 and fuel bills are not a concern)

In contrast, some thought energy suppliers would be able to use the information they receive from the smart meter constructively and offer consumers tariffs/energy packages based on their consumption patterns.

“You know with your mobile phone, they could say this package would probably suit you more because you tend to use yours in the morning or you’re using yours more, they sort of get to know you”.

(Female, Newcastle, under 40 and fuel bills are not a concern)

Reassuringly, there were no widespread concerns about energy companies having access to information about their energy use.

5. In-home Displays

Key points

- Reactions to the In-Home Display were fairly positive as it was seen to be potentially helpful to consumers in saving energy and money.
- Traffic light display was received positively and was seen as a key element of the IHD. There were concerns about the impact on older vulnerable adults in frightening them into turning off or down appliances they need to stay warm and healthy.
- The numerical display was considered an important element of the IHD, with virtually unanimous support for the idea of usage being shown in pounds.
- Ideally, customers wanted a single device capable of showing gas and electricity consumption. Consumers should be able to switch between displays.
- Other potential functions which aroused interest were being able to identify the cost of running individual appliances; and being able to link their In-home Display with their payments, so that consumers can budget and prepare themselves for their next payment.

A key part of smart metering is the in-home consumer display. The display, while separate from the smart meter itself, can 'talk' to the meter and provide consumers with accurate up-to-date information about their energy consumption.

If people are to obtain maximum benefit from these devices they need to be kept where they will be seen, and size and appearance were both important. People want a display that is neat and compact but with a screen that is easy to read.

If they like the device and feel they could use it they are likely to keep it in the kitchen, hall or lounge. The device is more likely to be placed in a visible location if it is compact and attractively designed. A large ugly appliance was more likely to be hidden away so the aesthetics of the device are potentially important.

Some expressed concerns about an electrical device using up one of their scarce power points and many picked up on the irony of an in-home device itself using electricity. Therefore there were suggestions for having solar powered displays or ones that could use rechargeable batteries. Some liked the idea of being able to carry the device from room to room, particularly if they wanted to check on the energy usage of different appliances. Some felt this device would use very little electricity so were not overly concerned about the cost of running it but wanted to be able to have a battery option so they could take it from room to room.

So while some were quite happy with the idea of an appliance that used electricity, ideally customers would be offered a choice of electricity or battery-powered or have a battery option with an electrical device.

The discussion turned to the information that could be displayed and in both focus and household groups, respondents were prompted for their reactions to basic features of smart metering. Specifically groups were asked about their views on different displays showing:-

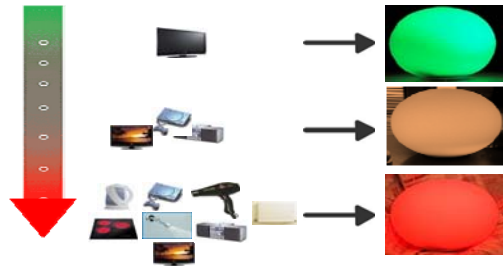
- traffic light display to identify times of high-low usage
- numerical information (e.g. actual electricity usage per hour, in either kWh or £/p)
- graphical data showing energy consumed by the day/ week/month or longer.

Traffic light display to identify times of high-low usage

One of the options presented to respondents was to have a warning light system, whereby:-

- **green** indicates the household was using below average/ normal usage of electricity;
- **amber** shows normal or slightly above average usage; and
- **red** warns the household they are using an unusually high amount of electricity.

HANDOUT 3



The traffic light display shown above received mixed responses across the groups. Many reacted positively to the display as providing a clear and simple visual on their consumption. A few thought it could be useful as an educational tool for young children/teenagers. However, other respondents thought the traffic light display did not provide particularly useful information and could be problematic. These issues and views are presented in more detail below.

Simple and visually eye-catching display helps to monitor usage

Respondents typically embraced the simplicity of the traffic light display and welcomed a clear visual of how much they were using at a given point. In particular, respondents pointed out that such a visually eye-catching display would make them more aware of how much energy was being used overall.

“If I was looking at a green light, I made a cup of coffee, came back and suddenly it’s red, I’d be saying ‘Who!’ I think they’re just trying to get people to monitor their usage ... I don’t see any harm in it warning you and if it went from green to red, you’d have to think there’s an awful lot of stuff going on, maybe you’ve been up in a bedroom, left the television on up there.

I would find it useful because it would be a very simple, easily identifiable way of telling me at any given time that I was using a lot of power or not. I mean, I might look at the red and say gosh, that’s red and I look at everything that’s on and say well, I need all of that on but I’m happy but it might well be that I’m using stuff that I don’t need to and I’m wasting money and, for the sake of three lights which could be easily incorporated, I would find it pretty helpful”.

(Male, Rural North East, 63+ and Fuel Bills are not a concern)

Respondents also pointed out that instant changes in colour could help people with identifying which appliances were using a lot of energy and encourage people to think about their use of individual appliances.

There were other suggestions as to what the traffic lights should mean. Some individuals thought a green light should mean that it was cheaper to use electricity at that time and so identified a cheaper tariff. While this was only suggested in a couple of instances, this finding does raise an important consideration about the installation process, namely that the attending engineer and the written instructions should make clear the objective and purpose of each display.

Conscience jogger

Most respondents said they would keep the in-home display in their kitchen or living room, the prominent position of the unit, in the most used parts of a home, being a deliberate choice to ensure that members of the household could see how much electricity was being used.

"It might be handy, like you say, if you automatically come in, stick your phone on charge and leave stuff on standby. I think if you actually see it clicking round and stuff, like your computer plugged in and stuff like that. I think you would then maybe start thinking unplug it, switch it off, take it off".

(Female, Newcastle, Under 40, Fuel bills are a concern)

Seeing the IHD regularly on an amber or red light would remind them they were using a lot of energy/appliances and prompt them to reduce their consumption and avoid unnecessary expenditure. This conscience jogging function was seen by some to be one of the most effective functions of the display.

However, a few respondents said if the display regularly went to red it may have the opposite effect whereby they would put the IHD away into a drawer.

Help to warn people when appliances are left switched on by mistake

Aside from the traffic lights assisting consumers with monitoring the broad amount of electricity used at that time, it could help with highlighting unnecessary wastage and ensuring safety.

"I mean things like having your computer on and leaving it on. If you say went into the kitchen and that was on red, it would make you think. Then I'd think, 'Well what's been left on?' It just makes you a bit more aware that there's things on that you didn't realise".

(Male, London, Under 40, Fuel bills are a concern)

"... it could be red flashing at you and you would search your home to find why, and you might have a shock to find something that you are using or is on, is causing that and you didn't know".

(Female, Rural Wales, 40+, Fuel bills are a concern)

Many respondents could envisage situations, as the above quote illustrates, where they may think all appliances have been switched off, but the display indicates (by an amber/red light) that appliances are still plugged in. Examples given where appliances had been left on in the past, included leaving heaters switched on in attics or conservatories.

However, some argued that you would know if you had left on noisy high-energy using appliances such as kettles, hair dryers or tumble dryers.

Using the traffic lights as an educational tool for young children/ teenagers

Across the focus groups, young children and teenagers were identified as high energy users. Parents often explained that their children have various different electrical appliances and were among the worst culprits for leaving appliances and household lights switched on. But encouraging change in their energy consumption was felt to be a difficult task.

Against the backdrop of this challenge, it was encouraging to hear that many families thought the traffic light display could be a useful educational tool for their children. Families hoped to tie in their children's usage within the home, with what they were being taught at school and encourage behavioural change in energy consumption.

Displaying monetary values was felt by some to be of less use when trying to encourage reductions in energy consumption among children. But the implied association between the simple use of traffic lights and the cost of energy would clearly visualise to young children and teenagers the impact of their energy consumption on the household bills.

“If you had something like that sitting there, you could show them (his children), you’ve gone up and you’ve done this, this and this, and they’d start to look at it and think well. Probably not worry about it because I’m paying for it, but actually look at it, they’d see where I’m coming from”.

(Male, Rural Hertfordshire, Pre-payment meter)

Some families went a step further and suggested that their children’s pocket money could be tied in with the traffic light display, for example, money dependant on not triggering a red light for a day/week. However, this could be more effective if the in-home display was able to disaggregate the household consumption and provide information on how much energy individual appliances were so households could better target their efforts to reduce their consumption/expenditure.

Working out the average for the traffic lights

Some groups grasped the principles of the traffic light system without worrying much about the details. But in the Scottish and Northern groups in particular, key questions were raised about how the smart meter and traffic light display would be calibrated to identify times of low-high energy usage. Specifically respondents questioned:-

- what the basis of the average for each of the traffic lights would be – was it the average for that time of day/ a week/ month?
- would the usage to trigger an amber or red light be based on their actual household, the national average or the average energy consumption for a house of their size/ occupancy?
- how much energy would a household have to consume before triggering an amber or red light?

Some families speculated that they used so much electricity the traffic lights would normally be on red in their household. Most respondents felt using the average level of consumption for their personal household would have the most impact in jogging their conscience and reminding them they were using a lot of energy/appliances. Using a broader benchmark to measure their consumption against would be less effective in engaging the user with the display. There were also concerns that people would ignore the display if it went or stayed on red too often. As this respondent explained:-

“It depends, if it wasn’t very accurate and then just went to red quite soon after you putting the stuff on in your house then you would get sick of it and you wouldn’t pay any notice of it. They’d have to make sure they had a good benchmark for what your living standards are”.

(Male, Newcastle, Under 40, Fuel bills not a concern)

A few respondents did suggest that having additional information on the national average or the average for a household of their size could be a useful benchmark for comparison, thought this might be better as an addendum to the instruction leaflet rather than as a basis for calibrating the display.

Useful for people with disabilities

An in-home display has to meet the varying needs of consumers, and in particular ensure the technology is user-friendly for people with disabilities. While groups were not specifically prompted on how the traffic light display could impact on people with disabilities, individuals did highlight some positive aspects in meeting their needs.

For example, respondents stated that the coloured lights would be helpful to individuals who are partially sighted/visually impaired and who might have difficulty reading text/graphs. Others suggested the use of traffic lights could be replaced with sounds (such as a buzzer) to alert a blind person when they were using a lot of energy.

“What about people that are blind, that have to have things so they can get to the doors ... What about people like that that live on their own and if these are put in automatically how would they know if there was a fault, how would they know what was happening if it was just a red light system?”

(Female, Rural North East, 63+, Fuel Bills Not a Concern)

Another respondent highlighted that the use of coloured lights would be helpful to engage consumers who had difficulty with understanding numbers or graphs:

“I think the colours would be helpful as well because you get people who ... say somebody who was dyslexic or something who's not very good at reading numbers and letters, a colour system would work very well for them so it would probably get to market”.

(Female, Newcastle, Family, Fuel bills a concern.)

While the issue of sight-related disabilities was spontaneously raised in groups, consideration should also be given to consumers with physical disabilities particularly whether this group of consumers have specific issues relating to the functional design, for example using buttons to switch between displays. It should be noted, however, that the scope of this research was not to investigate the specific needs of disabled consumers.

Scepticism regarding the value of traffic lights

Some respondents were sceptical about how the traffic light display could help consumers to reduce their energy bills. If their IHD was showing an amber/ red light, the immediate reaction for some might be to bring their energy usage down to amber/green and to use appliances when they were using less electricity overall. So rather than peaking at red, the IHD could be kept relatively constant at amber to flatten out the highs and lows of consumption without reducing their overall usage/costs.

“... say your housemates are doing cooking or having a shower, then you use your hairdryer, it goes red. Just because at that particular point you're all using it, whereas you could just do it in different stages, it would still use the same amount of electricity but just you haven't done it at the same point”.

(Male, London, Under 40 and fuel bills are a concern)

“I think that's useless because what you might do is just turn one thing off and then use it later to stay on amber. So you're high you go to medium but if you're medium all the time your bill's going to be just as high, isn't it, so it should give you a colour for the month or the week rather than the moment”.

(Male, Newcastle, Under 40 and fuel bills are not a concern)

Others suggested traffic lights will usually confirm what people already know – that is that they are using appliances. This information was seen as particularly unnecessary in single-person households.

“This is no good for single people at all because you obviously know because if it goes to red, you’re using something because you have to use that something so this is no good. This is for the purpose of a family. If it goes into red, you’ll be able to find out why it’s gone into red and go and check the computer. It’s no good for single people at all”.

(Male, Edinburgh, Single 40+ and fuel bills are a concern)

Some argued that the traffic lights might change colour when an appliance was being used, but if the user felt they wanted or needed to use that item, the display would not stop them from doing so.

An alternative suggestion was for the traffic light display to have a colour code to indicate their overall use for the day, the month or the week (in comparison to their usage last week or month, national average or using a similar household as a comparative benchmark). Using the traffic lights as a broad marker for consumption could help households to work on reducing their overall consumption from perhaps a red to amber.

But this was a minority view and a more commonly held view was that the immediacy of the traffic lights was a key element of its potential impact.

However, while some recognised that the greatest impact would be found by the lights going red immediately they disputed that it was particularly useful to know that certain appliances they felt they had to use, especially those used for short periods only such as kettles or hair dryers, used a lot of energy.

Some people thought while the display was eye-catching, it could create stress by provoking arguments, particularly with teenage children or flatmates about their energy usage and bills. However, others argued that the independence of the display might help to settle arguments rather than start them or cause them.

Creating alarm among older people

There were concerns across the groups about the impact of the traffic light display on older, vulnerable adults. Typically respondents were concerned that older people would be alarmed by the traffic light display and worry that an amber/red light meant their energy bills would be high. In worrying about paying their energy bills, older people may then possibly endanger themselves by switching off their heating or the lights to reduce their energy usage.

“You find people who are watching their pennies, who perhaps don’t have much of a pension. If they see these things where the green light turns to amber, they might think, ‘Oh God, I’m costing money.’ Go and switch things off and then freeze. So you’ve got to think of those as well.”

(Female, Rural Hertfordshire, 40+ , Fuel bills are a concern)

“My concern would be old people. They would get this and they would end up turning their heating off”.

(Female, Edinburgh, 40+, Fuel bills are a concern)

However, this may be at least partially overcome through a clear set of instructions/demonstration that explains this function. The device could be discussed within the context that as older people they get a winter fuel allowance and with direct debit their payments will be averaged out over the year, so they will not necessarily see an increase in their bills when the IHD is red. Underlying this it will be important that the calibration of the traffic lights is considered in light of the potentially alarming impact of an amber/red light on vulnerable consumers.

Interestingly, most of these concerns were voiced by younger respondents rather than in the older focus/household groups. However, one older woman confirmed that she would be alarmed by the red light:

"It would frighten me because I'd be frightened and I would stop using things. I don't leave lights on very often, if I'm in one room I have a light on".

(Female , Rural North East, 63+, Fuel bills not a concern)

A few respondents in these groups suggested that an in-home display may not be appropriate for older people and that energy suppliers should instead provide vulnerable consumers with cheaper/social tariffs.

There were references to older people turning off lights and relying on candles or a single light, but most of the comments related to heating. As most heating is gas rather than electrical, this may not be as big an issue as some feared assuming that the traffic light display is only for electricity usage.

Numerical display

HANDOUT 2



Another part of the smart metering system is the consumer display. The display is separate from the meter but can talk to it.

As a result, it can provide consumers with accurate up-to-date information about their energy consumption. Unlike a smart meter, which is stationary and may be relatively inaccessible (e.g. in a cupboard under the stairs), consumers can use these displays to monitor their energy use.

KwH vs £/p

Respondents were shown a numerical display with text suggesting this can show 'accurate up-to-date information about their energy consumption'. Several issues were discussed in relation to the numerical display including consideration of whether people would prefer:-

- accurate usage by KwH; or
- an approximate measurement in pounds and pence.

All groups were told that the £/p display would be less accurate than a KwH reading because of the difficulty in calculating units by the correct tariff (for example, where two tier charging applies). Nevertheless, this topic produced one of the most clear and decisive findings. Even when they understood it would be approximate while KwH would be exact, nearly all respondents said having a display showing their consumption in pounds and pence would be most useful.

To most respondents a KwH of energy usage did not mean very much. Since many respondents' primary motivation in using an in-home display would be to save money, rather than reduce their consumption per se, individuals explained that £/p display was the most important measurement of their energy consumption:-

"You don't pay for anything else in kilowatts so it would make more sense to put it in pounds and pence".

(Male, Newcastle, Under 40 and fuel bills were not a concern)

"I think most people probably don't know what a unit of electricity or gas is. So there would also have to be guidelines but it would be more interesting if it counted up money on the screen, I think people would definitely start looking at it. I would look at it".

(Male, London, Under 40 and Fuel bills are a concern)

A few suggested that having both KwH and the cost side by side on a single screen or accessible by switching screens by pressing a button on the IHD would be helpful.

Respondents argued that keeping a tally of the estimated cost by day/week could enable consumers to monitor their usage but also help to work out how much individual appliances cost to run; kWh measurement would monitor their usage over similar time frames but more clearly identifies whether the household has reduced how much electricity they use.

"It does need to show how much you're using. It has to show you kilowatts. It has to, because you've got no idea what you're using. People don't know how much a TV uses. Nobody's got an idea. If you know what you were using then you may say well there may be an alternative way for me to make this cheaper for me be it a different light bulb or be it a kettle which is faster boil or whatever. There are ways so you obviously need to show the kilowatts."

(Male, Edinburgh, 40+, Fuel bills are a concern)

This is a good example of how people could make intelligent use of the display and link it to other information to help them make real reductions in their energy consumption.

While people want the display to show pounds, if the figures do not tie in exactly with their bill, some customers are likely to query this with their energy company. Clear instructions need to be left with customers to minimise the extent to which this happens, but energy companies may also consider tariff simplification if this reduces the numbers of calls they field.

Gas v electricity v total energy

Encouraged by the visual prompt, people tended to associate the traffic light system with electrical rather than gas appliances. And some people felt the device was simply more relevant for electricity than for gas because:-

- they had a wider range of electrical than gas appliances
- gas usage was mainly central heating that could be controlled.

Others felt both were equally important, especially as gas bills were often higher than electricity bills. And some felt experimenting with central heating should be just as practical with this device as experimenting with adjusting electrical appliances.

"I think if you switched on the central heating on, gave the central heating 12 hours to charge up. Have a look to see how much it's increased. That's costing me £10 a day".

(Male, Edinburgh, 40+, Fuel bills are a concern)

It was considered a good idea for the display to cover both gas and electricity and possibly a combined reading for total energy used, with the customer able to press buttons or icons to switch between alternative displays. But some recognised this might depend on whether consumers are dual fuel or have separate suppliers.

There was some concern that where consumers have separate suppliers this could mean having two IHD units; ideally people wanted to access all the information for both gas and electricity on one unit and be able to read these either side by side or be able to switch between the two.

Dual fuel customers were perceived to have a potential advantage in this regard, and the prospect of having a single display might encourage people to have a single energy provider.

Running total of how much is owed to the supplier

Some respondents wanted the option to manipulate data from the smart meter on the IHD to work towards reducing their consumption and ultimately save money. The options discussed by groups included having:-

- a running total – so the IHD total is refreshed following their last bill/payment, so consumers know how much they owe their supplier or have remaining on their pre-payment meter.
- a flexible option with a reset button - so consumers determine how they monitor costs. So for example, from the beginning of the week/month.

Given the widespread concern about the impact on older and vulnerable people, some groups noted that with a running total display older people may be encouraged to keep the heating/lighting on for longer. As this respondent explained the running total would keep them informed on approximately how much they owed:-

“... they could go, ‘Oh okay, so I’m under this much’, where they don’t know anything at the moment they’re turning the heat down because they don’t know how much they’re using”.

(Female, Under 40, London and fuel bills are a concern)

Access to up-to-date information, even if approximate, on how much households had spent was considered to be important in empowering consumers in a way that information already available on their current meters or bills was not achieving.

Having the running total on how much a household had spent/owed their supplier provides transparency so that consumers learn how their bill accumulates. But more importantly respondents hoped the information would enable them to control their consumption and budget for their next bill, particularly where energy use had been higher than normal.

“You prepare yourself for the bill that’s going to arrive. It would have been pretty important this winter because I think everybody’s had their gas on”.

(Male, Rural North East, 63+ and fuel bills are not a concern)

You could budget for. If you think you’re going over what you can afford you would try and cut down on things you don’t need like the dryer and stuff like that”.

(Female, Newcastle, Under 40 and fuel bills are not a concern)

By the same token, some pre-payment meter customers explained that a £/p display would allow them to easily monitor how much credit they had remaining, particularly if their actual meter was not easily accessible.

A few respondents paying by direct debit suggested that knowing whether they were within or above their monthly direct debit would be useful, but respondents still expected payment to be regulated so that they were in credit in the summer and debit in the winter.

Based on the remote readings, some direct debit payers in the north east groups speculated that a review might take place so that they are warned in advance whether the supplier needs to increase the monthly payment to take account of higher usage in a quarter(s). The prospect of such reviews divided opinion. While one respondent preferred regular reviews around every quarter, others suggested having a credit limit of, say, about a £100 and when a consumer was nearing that limit for the supplier to contact them to inform they needed to adjust their direct debit. This option of using a financial threshold to help consumers with managing their bill payments was felt potentially attractive to some.

This highlights that more customers saw potential benefits in suppliers having more frequent access to consumption information than expressed concerns on this score.

How much energy certain appliances use

In taking control of how they use energy, some suggested it would be helpful to them to have information by both kWh and £/p to measure how much energy individual appliances were using and costing the household to use. So if they are struggling they can find ways of cutting down. People were keen to understand how much different appliances were costing them, and some were already making a point of replacing older appliances with more energy-efficient ones.

Some felt that even if the display did not directly show consumption by appliance, a little intelligence would enable them to work out the relative consumptions from the display.

"If that says 4000 for argument's sake and then you switch your kettle on and it went to 4012 then you switch it off then you know what you've used, you can compare it."

(Male, Edinburgh, 40+, fuel bills are a concern)

"Yes, for instance, maybe you could check the reading before you did a wash in your machine and then took the reading after. Maybe you could also check how much it actually costs you to do that wash".

(Male with a young family, London and fuel bills are not a concern)

Encourages responsible energy use to reduce carbon footprint

Environmental concerns were raised by individuals who felt that having kWh display would be important. In particular, a few respondents explained that suppliers could use this information to encourage consumers to use energy responsibly and provide information on how they can reduce their carbon footprint:-

“Could they give you goals on responsible energy use, so like if you’re a single person in a week you should use x amount and the national average is this and if you’re below this you’re helping with the carbon footprint”.

(Male, Newcastle, under 40 and fuel bills are not a concern)

“We need to be more aware about how much we use, for the environment really, for the earth. So it’s nice to know that you’re not wasting too much energy unnecessarily”.

(Male, London, under 40 and fuel bills are a concern)

“I would go with that. If it’s a multipurpose tool for stuff like that and it brings down the carbon footprint then I would look at that”.

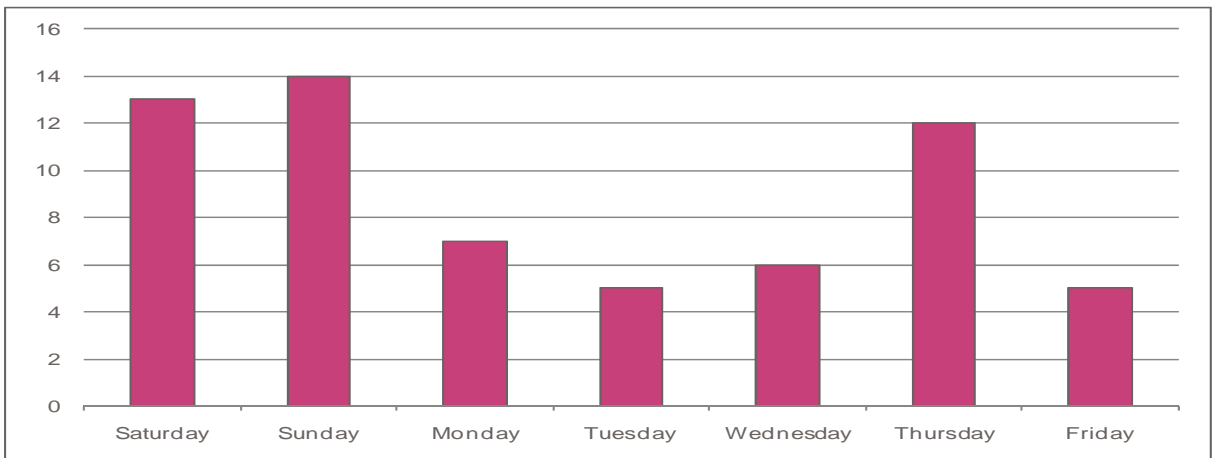
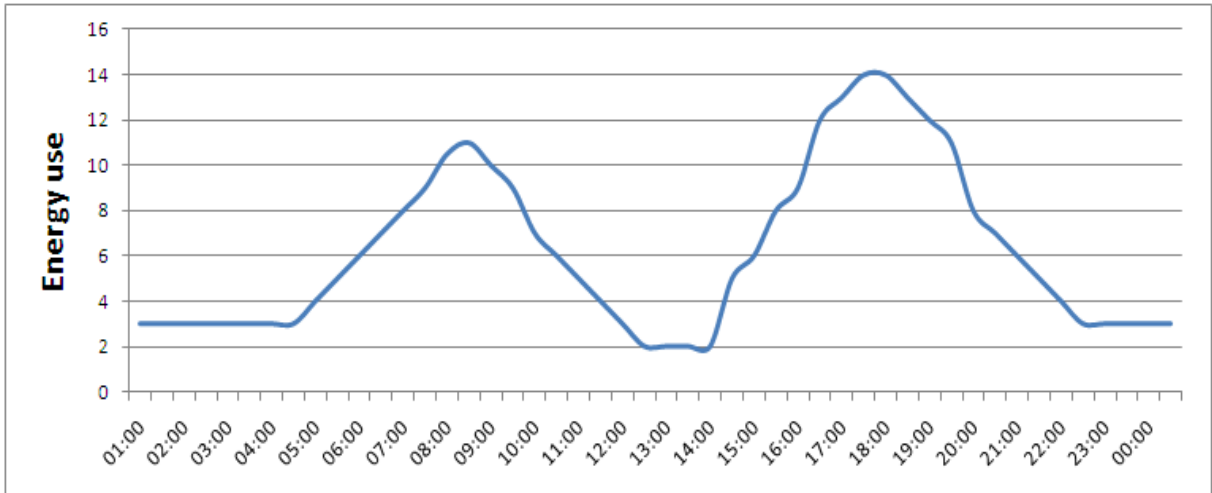
(Male, Edinburgh, 40+ and fuel bills are a concern)

One respondent suggested a potential advanced application for the IHD, whereby the IHD could tell consumers when renewable energy was available on the grid at a cheaper tariff.

Graphs

Groups were shown graphs with the energy consumed over a day and over a week and they were told graphs could display consumption over longer time periods such as a month or year.

HANDOUT 4



Reactions were most positive where people were committed to reducing their energy consumption and:-

- felt there were ways they could reduce consumption and felt more information would help them to identify such opportunities; and
- were confident in their ability to read, understand and act upon graphical data.

Some felt graphs could be a useful addition to information on current consumption. There was some discussion about being able to see not only their rate of current consumption, so they could work out how much individual appliances cost to run or the cost of peak periods, but also make month-on-month comparisons of their energy bills. Some felt this would act as a motivator, not just a monitor, and might have the effect of confirming they are on the right track or highlight they still need to do more to have a significant impact on their consumption:-

“Or an option to have, maybe like a big enough display to show you everything. This is how much it’s costing an hour. This is how much usage you’re using, and that’s how much you’ve used so far, extra of what you’ve done last month, or how much you’ve saved against last month. So it’s giving you lots of different readings off there ...”.

(Male, Cardiff, Under 40 and fuel bills are not a concern)

However, people were less likely to react positively if they lacked confidence using and interpreting graphs and:-

- were doubtful as to whether they could make or were prepared to make reductions in their energy usage; and
- if people felt having information on when they used more energy was not itself going to be helpful.

Where respondents considered graphs a helpful feature, they expressed different views over what options they would find most helpful, some wanting to see energy consumption over a week, some favouring months while some wanted to compare this year with the previous year.

Graphs were thought to be one way of checking on what other household members were up to, or on checking that the device was working properly.

“The only thing it might be good for is if you’re away and let’s say at lunchtime if you’re doing 9 to 5 and you get a graph and you see it’s peaking between 12 and 1 and you’re wondering why it’s peaking between 12 and 1 then that’s a possibility but of the majority of people are out of the house until the evening then there’s no need for a graph because you’ve got the information in place in from of you”.

(Male, Edinburgh, 40+, Fuel bills are a concern)

A few respondents wanted to see year on year information, so as to compare corresponding months and see if they had reduced consumption for that time of year. However, this would only be useful where they could remember what, if anything, changes they had made between one period and the equivalent period a year later.

However in comparison to other possible displays, graphs were seen by some respondents as providing “*too much information*” and less importance were given to information that was not displayed in real time. As some respondents explained, it may be difficult to know why a graph peaked during a certain period and establishing the reasons why could be awkward even if it was looking at recent events.

“No, because if it happened two or three days ago you’d be thinking what was I doing two or three days ago. If you had a traffic light system on your fridge that told you instantly you’re in the red, you need to change the... you would be more than likely to think turn that off, turn that off than to look through (a graph) for something that happened last week and think why was my bill high then, did I have the fridge on, did I have the washing machine on?”

(Male, Newcastle, under 40 and fuel bills are a concern)

“A graph, even for me, would complicate it. I’ve no idea why I’m going to need a graph. What would I need a graph for?”

(Male, Edinburgh, 40+ and fuel bills are a concern)

Unlike the traffic lights or the £/p display, the graphs were felt to provide little or no scope for people to change their usage of appliances immediately in response to current information.

Groups were asked for their views on how they would like to receive the graphs and numerical types of information. Typically respondents said they would want the information to be accessible on the IHD. But there were some differences between respondents. In addition to accessing the information primarily on the IHD, a few respondents said they would like to receive numerical data by a text message. And some said graphical information may be easier to read either via the Internet, an interactive feature through their television screen or to have more detailed information included with their bill.

While some expressed interest in receiving information online, people realised that many households do not have internet access, so information available online would also need to be available via other sources such as the IHD.

Some preferred the idea of seeing graphical and financial information on the larger screen of their computer. Others were doubtful as to whether they would switch on their computer to find this information – or whether they would welcome being diverted from something more interesting and enjoyable.

Most participants said they would only want a display if it was free. When it was suggested that a basic model might be free but they might need to pay for a more advanced model most resisted the idea of paying extra, although some did not reject this possibility. Graphical data emerged as a ‘nice-to-have’ rather than absolutely essential part of the display; a very small minority might be willing to pay for a display that included graphical consumption data in preference to one that did not.

Likely impact of the In-Home Display on behaviour

Some were confident that the In-Home Display could help them effect savings by showing where they needed to change their behaviour and use of appliances. They believed the traffic light system and numerical displays would encourage people to take quick steps to avoid wastage, reduce usage and save money.

While people might struggle to keep finding new savings once they had had the IHD for a while if they applied the quickly-learned information over a long period, they would make long-term and potentially sizeable savings.

"If you had that you're going to be, I would guess, saving money because it's going to alert you to the fact probably that you're using stuff you didn't need to use and, therefore, you'll be monitoring your future bills because you'll be able to work out whether this has been worthwhile because, in theory, you're going to be paying less money".

(Male, Rural North East, 63+ and fuel bills are not a concern)

But other respondents argued that although seeing the displays would warn them that a lot of energy/appliances were being used, it would have no impact in changing their behaviour, either because respondents felt the display would be highlighting the obvious – telling them they were using a lot of energy when they already knew this – or they saw the use of certain/multiple appliances as a convenience they would be unwilling to rein in. These views were particularly prevalent among families with teenage children:

"I think common sense tells you the things like tumble dryers, hair dryers, straighteners, kettles; they use a lot of electricity. I don't know, because I think a lot of the time it's essential, you've got to have electricity, you've got to have gas whether you're paying a lot of money for it or not. There are times when you can turn the lights off and you can cut it down a little bit but other times it's essential. It's something that you've got to have".

(Female, Newcastle, family with children and fuel bills are a concern)

Some felt that while energy was expensive but still affordable for them, they might lack the motivation to cut down on usage, with environmental factors very much a secondary consideration for the vast majority. If energy became more expensive, that could give some the motivation they needed to cut down.

One respondent, whose family originated from the Caribbean and who tried to spend a lot of time there, had found attitudes towards saving energy were different from her own in a country where energy costs were high. She struggled to adapt, partly because she was not used to making an active effort to thinking about saving energy.

"In St. Lucia the electric's high and (the landlady) popped round to say I was using too much electric and she pointed out that I had the lights on in the front room, there's two lights in the front room. She said to me 'you only need one light'. I just haven't got a clue. I don't worry about things like that. Some people don't".

(Female, London, Under 40, Flatsharer)

She felt she needed guidance on how to save energy as it was not something she had consciously thought about.

To encourage households to monitor their consumption and reduce their energy usage, some groups suggested that people could be prompted by setting targets based on any of the three displays and offering incentives; for example a campaign to get households to reduce their energy consumption by 5% and suppliers offering a discount off their next bill, if these reductions were achieved.

Two-way communication

Some suggested the IHD would be more effective in helping customers save money and manage their bills, if there was more communication between the customer and their supplier.

One respondent suggested a review a few months after a smart meter and IHD had been installed. The review would focus on whether/how a household's use of energy had changed post-installation and advise whether their tariff could be changed to match their consumption patterns.

To ensure consumers remain engaged with monitoring their energy use, particularly after consumption patterns change and become embedded within a household, a few respondents suggested the IHD could be used by suppliers to send tips on:-

- how changes could result in savings – reducing heating by a degree can amount to saving £x over a year
- how changes could impact on their carbon footprint – using energy heavy appliances, e.g. tumble dryer, less frequently could reduce their carbon footprint by up to x tonnes.

Some respondents discussed being able to use the IHD to set a financial threshold; so that if energy consumption was higher than usual and affected their average monthly direct debit payment, the IHD would alert them to that much earlier and allow the household to adjust their energy usage accordingly. Currently, respondents explained, they had to wait until they received their bill.

People tended to react positively to the principle of the device warning them that their consumption in a particular period was much higher than usual.

6. Customer typologies

Key points

- There were different attitudes to energy consumption/ efficiency which cut across the various life-stages and financial situations but which tied in with reactions to the In Home Display.

In terms of attitudes towards smart meters/ IHDs there were some differences between those for whom energy bills were, and were not, a concern. There was slightly more interest in smart meters among those for who bills were an issue. But these differences were not that consistent between groups.

There were different attitudes to energy consumption/ efficiency which cut across the various life-stages and financial situations; the following typology is not mutually exclusive (nor exhaustive as there will be shades of grey between) but broadly indicative of the attitudes expressed by individuals and within households. Based on different attitudes to energy consumption/ efficiency and attitudes towards smart meters the following three-way division emerged:-

- energy conscious – keen to save
- feel they should do more to save energy
- complacent/apathetic regarding energy usage.

Energy conscious – keen to save

These individuals were found across all age groups, especially the over 50s. These households were already taking or had taken steps to save energy due to financial or environmental considerations:-

- they used energy-saving bulbs,
- made a priority of switching off appliances and
- checked utility bills.

They welcomed smart meters and were pre-disposed to using smart meter displays – but wondered if they were already doing what they could to save energy.

Feel they should do more to save energy

These households were often families, sometimes couples, in which one or more individuals were more and interested in saving energy than others.

Their usage was often high or higher than they felt it could be but they were not always sure of the best means of cutting back.

They were usually receptive to smart metering, although wondered if it might cause or aggravate family rows.

Complacent/apathetic regarding energy usage

These households were normally headed by people aged under 50, but did include some older adults. They would like to save money, but are unwilling to make sacrifices to reduce energy bills and are sceptical as to whether they could save energy without impacting on their lifestyle.

They might be interested in using smart meters but also wondered how the knowledge that appliances they need to use, such as hair dryers and kettles, consume a lot of energy, would actually help them to achieve savings.

7. National Roll-out

Key points

- There was little concern about how the national roll-out would be organised. The vast majority of people were not worried about whether they would be among the first or last to receive a smart meter and in-home display.
- Yet there were a variety of views on whether certain groups should be prioritised. Many thought families had the most to gain as high energy-users, while others thought cost-effective approaches based on regions/postcodes would be far more efficient.
- There were a few suggestions that people should be able to opt-out of having a smart meter but this was due to objections towards the IHD rather than remote readings via the smart meter.

Towards the end of each focus group and family group it was explained that there would be a national roll-out of smart meters so all homes would have smart energy meters (and in-home displays) by 2020.

Very few respondents across all groups claimed to have heard of the national roll-out. When asked how the national roll-out should be organised some favoured solutions on the grounds of practicality, while others suggested particular sub-groups (usually those with greatest need to cut back on energy consumption) should be prioritised.

While there were differences of opinion among participants as to how the roll-out should be organised, people did not generally have very strong feelings on the subject and because smart metering was not seen as a huge advantage most would be unconcerned as to whether they themselves were among the first or last to have a smart meter installed:-

"I don't think there's going to be a revolution".

"Some people will be bothered because some people are bothered about anything, but the normal person wouldn't be that bothered".

(Males, Newcastle, Under 40, Single household, Fuel bills not a concern)

Some were happy for energy companies to install to their timetable, particularly if the government or a regulator monitored what they were doing. Some felt companies would and should adopt an efficient postcode or regional based approach:-

"They'd have to do it region by region, wouldn't they. They couldn't do it like nationally".

(Male, Newcastle, Under 40, Single household, Fuel bills not a concern)

People talked about the roll-out of digital radio or TV as being done region by region and a postcode based approach was seen as easier for energy companies.

The rough justice of this kind of approach was also seen by some as fairer and less controversial than choosing particular types of households.

Some suggested it would be more efficient to start with more densely populated areas and only install in rural areas when smart meters had been installed in cities.

Another suggestion for a practical approach was that in the first year of the roll-out smart meters should be installed when household meters need to be changed – so effectively prioritisation based on age of meter.

Others suggested that the people most likely to benefit from using in-home displays would be those who requested them; so energy companies ought to initially prioritise those asking for smart meters rather than imposing them on households who were indifferent as to whether they had one or not.

However, some felt that if it was impractical to install a smart meter promptly in a particular location the individual requesting it would have to wait. Those in rural Scotland generally took this view as they had become used to their area being late to receive broadband.

Others felt certain groups should be prioritised so they had a smart meter installed at an early stage of the national roll-out.

People tended to favour the types of energy user they felt had potentially the most to gain from economising in their use of energy.

So there were suggestions that companies should prioritise households that had relatively high levels of energy usage – their high expenditure suggesting they may need and could benefit from help in reducing bills.

A refinement on this was the suggestion that fuel poor households who spend a relatively high proportion of their income on energy should be given priority. They have potentially a great deal to gain by economising, but it may be difficult to identify them.

Similarly some suggested vulnerable, low income people should be prioritised although there could again be difficulties in defining and identifying such customers. (One of the perceived advantages of a regional roll-out was that it avoided these awkward and potentially contentious issues).

Some of the pensioners surveyed nominated pensioners as a group that should receive smart meters first and some younger adults also made this suggestion.

However, a greater number of non-pensioners disagreed as they felt pensioners were likely to benefit least:-

- they may struggle to embrace the technology
- if there are teething problems with the technology it may be better if older people have smart meters and In-Home Devices when these problems have been sorted
- many older adults are already careful and economical and use a narrow range of electrical appliances than younger families so they have less need to cut back
- they receive Winter Fuel payments
- they may use it inappropriately turning heating off or down when they need to keep warm.

"Most pensioners, if not all of them are conscious of what they're using, electricity and gas, even without this smart meter. I know pensioners are careful, so if you're talking about who's a priority, then yeah, I'd probably have to agree, more likely, families. I would put pensioners further down the line because they know".

(Male, Edinburgh, 40+, Fuel bills are a concern)

Numerous respondents (including some pensioners) suggested families could benefit the most from the In-Home Device. They might need to cut back, could benefit the most from cutting their fuel bill and the IHD could help to educate family members especially children:-

"If they want to save energy they should give it to people with young children...for them to learn not to waste energy".

(Female, Rural Wales, 40+ Couples, Fuel bills a concern)

A 14-year old boy in a family group argued families should be given priority over pensioners because his family used a very wide range of electrical appliances while his grandparents who lived a few doors away, used very few, and hence were likely to have lower bills and less to gain from their In-Home Device (although his grandmother disliked having meter readers come to the door so she would benefit from remote readings via the smart meter).

If energy suppliers were required to arrange for smart meters to be installed in their customers' homes most were happy to grant companies some discretion in making arrangements. However there were also suggestions that the roll-out of smart metering should be supported by a multi-media national campaign which would make the whole programme appear more credible than something that appeared to be an initiative from a particular supplier.

Indeed, some felt national advertising encouraging people to take energy efficiency measures would mutually reinforce the introduction of smart meters.

By the time the guinea pigs had had smart meters for a year or so some argued there should be a wide range of case studies and testimonials to support the introduction of smart meters.

Few participants expressed strong preferences to be among the first to have smart meters and IHDs – and almost as many preferred not to be among the first, so initial teething problems could be sorted before they had theirs installed. However, some suggested that if a postcode/regional approach was to be adopted they should at least be told at a reasonably early stage when it was their turn to expect a smart meter.

Opting Out

Moderators did not directly raise the possibility of people opting out of having a smart meter but towards the end of the session they did check whether respondents would like to have a smart meter and In-Home Display.

In some groups all participants wanted one, but in several groups one or two preferred not to have one and in the over 40s Welsh group, almost half preferred not to have one. Overall, the vast majority of respondents said they would like to have a smart meter and In-Home Display.

A few participants (mainly in Wales in this research) suggested people should be able to opt out of the national roll-out:-

"My elderly mother, father doesn't really need this...and it would be nice to say 'no' they don't need it, they don't want it".

(Female, Rural Wales, 40+ couple, Fuel Bills are a concern)

"When my mother-in-law had dementia, she had one of these letters to say she had won a holiday. Oh my goodness did it cause her some worry, just a simple thing like that and she was so worried about it...She thought she'd have to go and she didn't want to so you see how something like this would worry her".

(Female, Rural Wales, 40+ couple, Fuel bills are a concern)

"I think the Government could produce something within the Energy Act to make it not compulsory, but with an option for those people that didn't want it...and then each organisation would implement it. That's the way to do it".

(Male, Rural Wales, 40+ couple, Fuel bills are a concern)

However, their objections were generally based more on an antipathy towards the IHD (coupled in some instances with a belief that it could be a slight hassle to have a meter installed) rather than a dislike of the principle of remote readings. In some cases it appeared to be the belief or concern that they might be paying more as a result of having a smart meter and IHD that led to rejection.

Given that there will be no obligation on people to use the IHDs the desire to opt out is probably less of a problem than it at first appears. Old meters will, in any case, need to be replaced, many of them before 2020, so it will not be a huge deal to replace them with a smart meter. There was no objection or desire for there to be an opt out in these cases i.e. no-one suggested that if their meter needed replacing, they should specifically be able to opt out of the replacement meter being a smart meter.

Participants did not argue for opt outs on the basis that customers should have the right to opt out of energy companies taking remote readings. However, some made clear that they did not want an IHD and wanted to be able to opt out of having one.

The suggestions that people should be able to opt out demonstrate that:-

- it should be made clear that there will be no compulsion for customers to use their In-Home Display
- where possible, sensible economies should be made regarding the costs of the IHD (for example, an Edinburgh man suggested that as much of the learning would come at an early stage of having an IHD, people should only be given IHDs for a few months before passing them on to other customers).

8. Installation Process

Key points

- Installation of smart meters and the in-home display should be supported by a demonstration by the engineer and a clear, concise set of printed instructions of no more than about four pages.
- Receiving energy efficiency advice might be welcomed by some at the point of installation, however this should not be used as a sales opportunity. This was felt to be a key concern for older and vulnerable adults who may feel pressured to make changes by the salesperson/engineer in their home.

Although some respondents were generally not keen on admitting strangers into their homes, this research revealed no major or prevalent concerns about the installation process. Many people had had meters exchanged in the past and had experienced no issues or only minor issues:-

“When I opened the door it was my next-door-neighbour’s brother. He said ‘I’m here to change your meter.’ It was funny it being him, but it only took half an hour or so. It was fine”.

(Woman in Herts family group)

Some wanted to choose where the new meter would be installed, particularly if the existing meter was in a location that made reading awkward, for example, outside, or in a cramped cupboard. As meter readers should no longer need to access the meter a couple of people with meters outside their home said the smart meters should be inside their home.

However, some felt the existence of the IHD made their meter location less relevant as people would have less desire or need to read their meters.

A few participants said that having had an engineer install their smart meter they would rather set-up the IHD themselves.

But far more would want and expect the engineer, after installing the smart meter, to also set up the IHD and show people how it could be used.

People also thought it important to receive printed instructions, especially for families where not all household members were available for the demonstration:-

“A quick 10 minutes from the guys installing it. Right this is this, this is this. They’d say right you have a go at it, fine, there’s the instruction manual as well, just in case”.

(Male, Cardiff, Under 40, Fuel bills not a concern)

“Normally they show you it when installing it and leave you the instructions”.

“Sometimes it doesn’t sink in, so you got the written instructions there to look at”.

(Females, Rural Wales, 40+ Couples, Fuel bill are a concern)

People did not want a lengthy instruction booklet but brief instructions supported by explanations.

Most felt that instructions for the IHD should be concise. Some suggested a single sheet, others no more than four pages.

Some felt long instructions that looked detailed and complicated would deter them from reading, and perhaps from using the IHD. But more complex and advanced applications will require explanations. This suggests the key popular applications should be listed first so people can understand quickly and easily the basic functionality.

While most wanted simple instructions there were also several suggestions for supporting information.

Information on the average energy consumption of different types of appliance was thought to be potentially helpful, and it could encourage the replacement of old appliances which are not energy-efficient. While information accompanying instructions needed to be kept fairly brief some saw the internet or supplier websites as potential sources of more detailed information.

Several respondents also suggested that easy to contact telephone helplines should be available if people have any queries on their smart meter or in-home device.

Energy companies may view the installation of a smart meter and IHD as an opportunity to earn more revenue from customers' – either through cementing their loyalty with good service or through direct sales.

The issue of receiving advice from installers or other energy company advisers was explored in groups. Reactions were very mixed.

There was concern, particularly among the over 60s, that they may be persuaded to sign up for things by a persuasive salesperson. Some women, especially older women, were concerned at the idea of installers providing them with advice/making suggestions.

"I don't mind energy efficiency advice but if they're going to sell you a product you'd think bloody hell."

(Female, Newcastle, Pre-payment meter)

"I think they should just put meters in because when people come to your door like that you can feel pressured and forced into something that you didn't really want them to think about it."

(Female, 63+, Rural North East, Fuel bills not a concern)

Younger adults were also concerned on behalf of older people:-

"I think you've got to be really careful like that, going into houses and suggesting that. People get a bit suspicious and elderly people as well, sometimes, when you hear about all these rogue traders and cowboys."

(Male, London, Under 40, Flatsharer)

Some were sceptical about the idea of an installer also acting as an adviser on energy efficiency and a salesperson.

In some instances their scepticism was based on the view that an installer would lack the necessary skills in delivering advice or need additional training to be able to deliver this.

A couple of others argued from a different standpoint suggesting installation required skilled trained engineers. Giving advice and selling additional services required less training and, crucially, less well-paid staff. They were dubious therefore as to whether energy companies would want their highly-paid installers doing work that could just as easily be done by lower paid staff with less specialist training.

For a variety of reasons, therefore, several respondents suggested or concurred that if energy companies were to provide additional suggestions relating to how people could be energy efficient this would be better if done by someone other than the installer and at a different time from the actual installation.

People generally liked the suggestion that those having a smart meter installed could opt in to receiving energy efficiency advice/guidance, either at the time of the installer's visit or shortly afterwards.

Some felt they needed to understand more about energy efficiency and felt further advice on subjects such as grants for insulation could be helpful.

People might also be interested in hearing about alternative tariffs that would save money.

For those who saw the IHD as a tool that would help them achieve some savings but also wanted to save more money a follow-up visit was seen as potentially useful provided it was free and they were not subject to a pushy sales pitch.

Suspicion of energy companies

This discussion was framed in the context that energy companies were required to install smart meters in the homes of all their entire customers by 2020.

Even so, some were suspicious of the motives of energy companies especially as they felt it was not in the interests of companies for customers to use less energy. Comments such as these made by men in the young Londoners flatmates group were fairly common across the research:-

"Why would the electricity companies embrace this if it's going to mean less money for them, if people are going to be using less electricity?"

"It's just not in their interest to do it".

It would be reassuring to respondents if they had a better idea of why energy companies were participating in the roll-out of smart meters. This might be achieved through a little candour from companies and/or government campaign/activity.

Appendix A – Case Studies

HOUSEHOLD CASE STUDY: LONDON (Energy conscious – keen to save)

This couple are in their seventies, retired and live in a modest sized basement flat in a desirable part of north London. Bright and capable, they are **energy conscious** and keen to save as much on their energy bills as possible. When they first moved into their home they felt energy bills had been reasonable and affordable. But since they've retired, energy bills have become problematic and they – never know if they are going to have an additional sum to pay on their standing order.

They have tried looking around for better deals with other suppliers but have found the rates offered are not competitive. They believe suppliers are making savings which are not being passed onto consumers like them.

They feel the cost of energy has had an impact on their lifestyle, for example not being able to go out to dinner and having to use the bus rather than their car in order to save money for their energy bills.

“It makes us feel we are depriving ourselves of things that we should be enjoying”

Similar to many households they have various electrical appliances around the flat and over the years they've put in energy efficient bulbs and ensured appliances are not left on standby.

Both were **very interested in the idea of smart metering**. They believed remote readings would provide a degree of security for older, vulnerable customers from bogus meter readers. They felt the savings from no longer having to employ meter readers should be passed onto consumers. Therefore the advantages of remote readings for the supplier should be met with a benefit for the customer – cheaper electricity.

The couple thought the IHD was a good idea, but they had reservations about how the in-home display could help them make savings in the long-term and the **traffic light display was of some concern** as it could cause them alarm and prompt them to perhaps unnecessarily switch the heating or other appliances off

“It's put the fear into you, might say well I won't have a wash, or dry my hair or put the TV because the lights will go. People on a limited income or older would find that distressful. And something like that, that shows red, means danger ... it would be scary!”

But they felt having a display showing **£/p would give them greater control over their energy bills**, particularly as they're on a fixed income

“It's like when you go and fill up at the petrol station, no one looks at how many units you've put in, it's pounds and pence! kWh wouldn't mean a thing, it's how much it's costing you”.

However given they are careful with how much energy they use, the husband in particular, felt the **potential savings to be made could be insignificant**.

If they were to have a smart meter installed in their home, the couple would like to have the option to choose whether they receive any additional advice/information on energy efficiency or tariffs. They had specific concerns that older and other **vulnerable adults may be pressured into making expensive changes** by the installation engineer.

HOUSEHOLD CASE STUDY: NEWCASTLE (Feel they should do more to save energy)

This is a busy household – mum, boyfriend, two daughters (aged 19 and 17) and a 15 year-old son. The home felt cold and they claimed to make a conscious **effort to minimise what they spent on gas and electricity** as they are aware that their pre-payment meter uses a lot of money – but later they suggested the IHD would always be on red in their home.

The mum and oldest daughter had seen the Smart Meter which reads appliances on GMTV which they thought was a good idea, especially for those on direct debit who do not know what their energy usage is. As a pre-payment customer, the mum said she knows her overall usage which is enough information for her, but the daughter would like one to help work out what appliances they could cut down on (especially for when she has her own home). The children felt measuring appliances would be more useful than just overall usage as they would pinpoint high energy usage

The family raised concerns over whether there could be a fault with information remotely transferred – especially regarding how much energy they had consumed.

Overall the family **reacted positively to the idea of having a smart meter** in their home. One daughter suggested that a smart meter might help people like them to switch from less energy efficient appliances, like an old fridge, to buying a new one with a better energy efficiency rating.

The family felt a key benefit of having a smart meter and in-home display would be to help them save money by monitoring their consumption patterns. By keeping a close eye on how much energy they used and in particular identifying when they were clearly wasting energy e.g. by leaving the television or other appliances on unnecessarily, the family could take necessary steps to change their behaviour and minimize how much they spent.

The in-home display also had a key purpose as an educational tool with the younger children as they could be taught about how much energy they used. This could be especially useful if the IHD could analyse by appliances, so that they could link pocket money to the children's energy use. For example, if one of the children wanted to use a games console they would have to pay out their pocket money allowance, and in doing so hopefully learn how to be more energy conscious.

The traffic light system was not of interest as they felt the in-home display would always be on red. **Traffic lights would have little impact in changing their energy usage patterns**

They suggested the **smart meter could be set to spend a certain amount of money**

If they go over the set threshold, they could be alerted to that with a different colour/noise or a text message

The mother said she might be tempted to go on to direct debit if the IHD gave them sufficient knowledge and confidence in what they were using to adequately monitor consumption.

HOUSEHOLD CASE STUDY: HERTFORDSHIRE (Complacent/apathetic regarding energy usage)

They have two sons aged 14 and 12. With two good incomes coming into their household this family was **not very interested in its energy bills** and neither parent was able to remember, even approximately, how much they paid each month through their direct debit. They acknowledged that they used a lot of energy – especially early in the morning when showers, hairdryers, and kettle were all used, and in the evening they would be using Play Stations, one of the homes' six laptops and their large Plasma TV. They did however try to minimise their gas bill by turning the heating on only when necessary, and opting for extra jumpers if they were cold.

The younger son found difficulty sleeping in silence, and preferred sleeping to the drone of an electric fan. His parents often turned this off when he was asleep, but he might then wake and turn it on again. **Family members disagreed on how much electricity different appliances were using** – so the father thought hair dryers cost a lot to use, but his son felt they used only a fraction of the energy used up by a Play Station.

They had made a point of choosing an energy efficient model when replacing their fridge recently, but did not know the energy consumption of other equipment. The decision to buy an energy efficient fridge may have been motivated by the parents and older son recalling a number of recent TV adverts encouraging prudent energy consumption as this had pricked their consciences.

The mother said they never left their equipment on standby while the red light of her Plasma TV glowed a few feet behind her head. It turned out she thought that switching equipment off so the screen went blank was the same as not leaving on standby. Her son and husband were **aware they often left equipment on standby** – the husband did make a point of turning everything off whenever the family went away but that was motivated as much by safety as saving energy.

Their meters were outside, accessible to readers, so remote readings were of no particular benefit to them. The husband felt that remote reading was fine in principle but if it proved less technically reliable than the present system it would be a bad idea.

They thought the IHD was an excellent idea and that households or families who struggled to pay their energy bills would find it particularly useful. They quite liked the traffic lights (although the older son suggested more gradations and possibly numerical values would be helpful). The traffic lights would act as a conscience pricker and would encourage them to check what had been left on.

The mother, especially, said they would be far more likely to take notice of numerical values if they were expressed in money rather than volumes of usage. However, the father said that with prices changing any comparisons over time would need to be in KwH rather than £ to make them meaningful.

The son had said early on in discussion that he would like to see graphs of consumption – and preferably online rather than on a small screen. But on reflection the family thought that unless the cost of energy rose sharply or their financial circumstances changed, **none of them would spend much time studying graphs of energy consumption.**

Essentially, they liked the idea of the In House Display, but while energy was easily affordable to them, they **lacked the motivation to make radical changes to their lifestyles.**

HOUSEHOLD CASE STUDY: WALES (Complacent/apathetic regarding energy usage)

They live in a village about 25 miles from Cardiff. The village has about 40 houses and no gas. This family lives in a small semi-detached council house. There are 3 teenage girls and 2 young boys.

The mother has lived all her life in the area and is used to cutting down on usage – when she is on her own she turns everything off – but when the children come home from school or during the holidays she seems to lose control, which is unsurprising given there are 7 TVs in the house as well as several X boxes, play stations, PS2s, laptops etc.

She was **aware that their usage of electricity must be way above average**, but there seemed to be no way she could encourage the children to turn things off. The girls do cover subjects like the planet and recycling at school but they don't seem to relate this to what they use –

“It doesn't matter how many times you say, it doesn't make any difference. I'm always banging on about global warming and recycling but they don't take any notice”.

The mother was aware of something called an Owl – she thought she had seen it in the Argos catalogue – which measures how much electricity is being used. In addition one of the girls knew of smart meters as her friend's mum had one, but the other members of the family had not heard of it. Although they could understand the information it would provide, they **did not see how it could really help them as they use so much**.

She could see advantages of the IHD but it was not for them – in fact there was general laughter at the idea that it might encourage them to turn things off. The family explained they would not take much notice of traffic lights as the display would probably be red most of the time when the kids were at home.

Where to put the monitor would be an issue as there are very few sockets in the house. While they had no concerns about data privacy issues, they did worry that in time companies may use the information to charge people (heavy users like them) more.

The main benefit would be to show how much money is being spent – by day and also monthly and weekly comparisons. One of the girls also thought it could be helpful if the IHD showed a plan of the house and pinpointed where electricity was being wasted.

In summary - they would not really want one as they felt it would have no impact on their lives. The mother saw little point in giving it to families like them as **she felt they had no choice but to use a lot of energy**. When asked who should be given one she thought probably smaller families as they might find it easier to cut down on their usage as well as single parents on benefit (like her other daughter) and pensioners. She acknowledged that the device could help some people implement energy savings.

9. Appendix B – Board Graphics

Smart Metering Description

A

Traditional meter



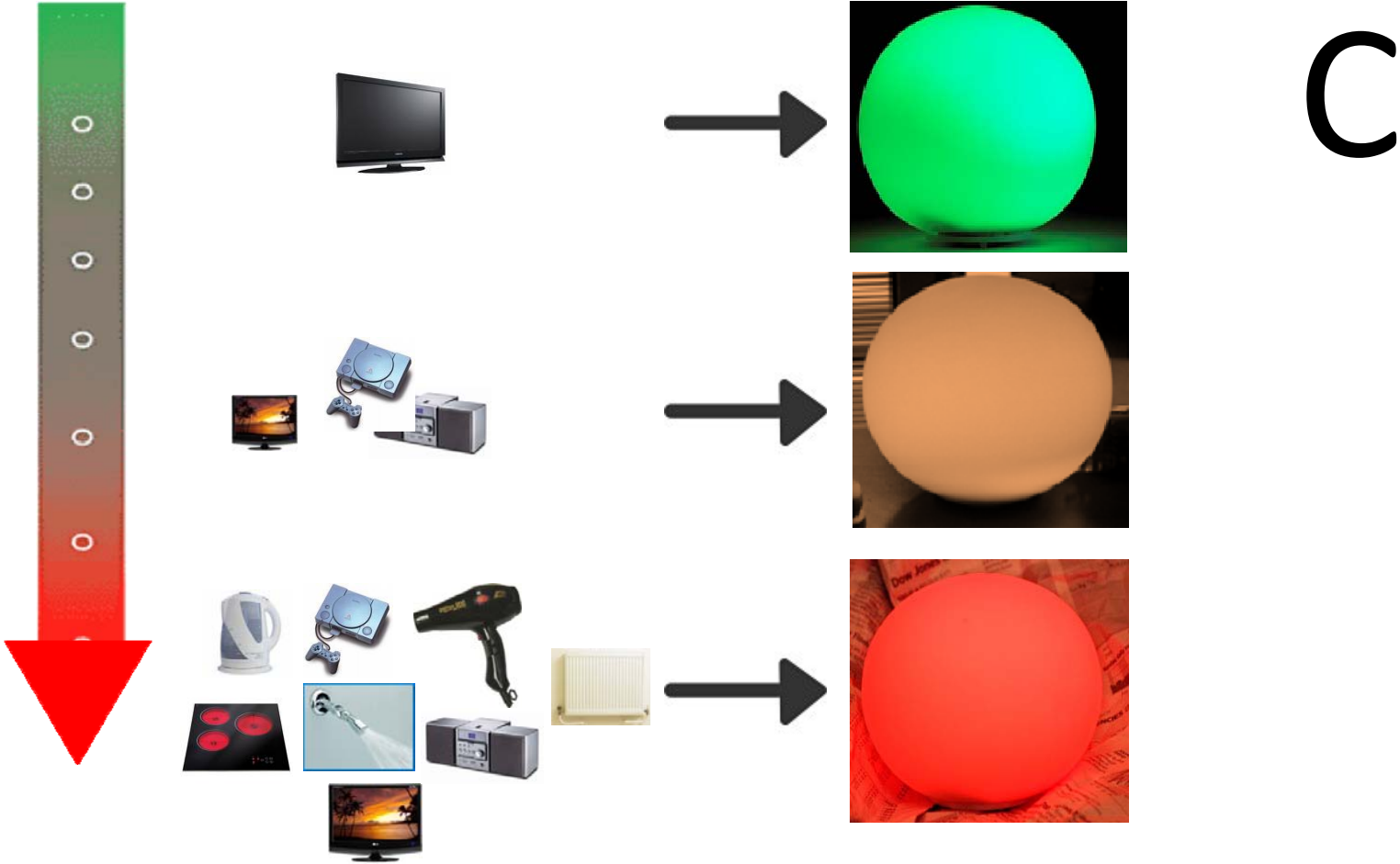
Smart meter



Traditionally, electricity and gas meters sit under your stairs or in the garage and are only disturbed when the meter reader comes to take a reading – usually once every quarter.

Smart meters are an electronic version of the meter you currently have in your home. They are 'smart' because they are able to communicate with your suppliers by sending and receiving information remotely. Smart meters will therefore stop the need for meter readings to be done manually via a visit.

Potential traffic light system



Consumer display



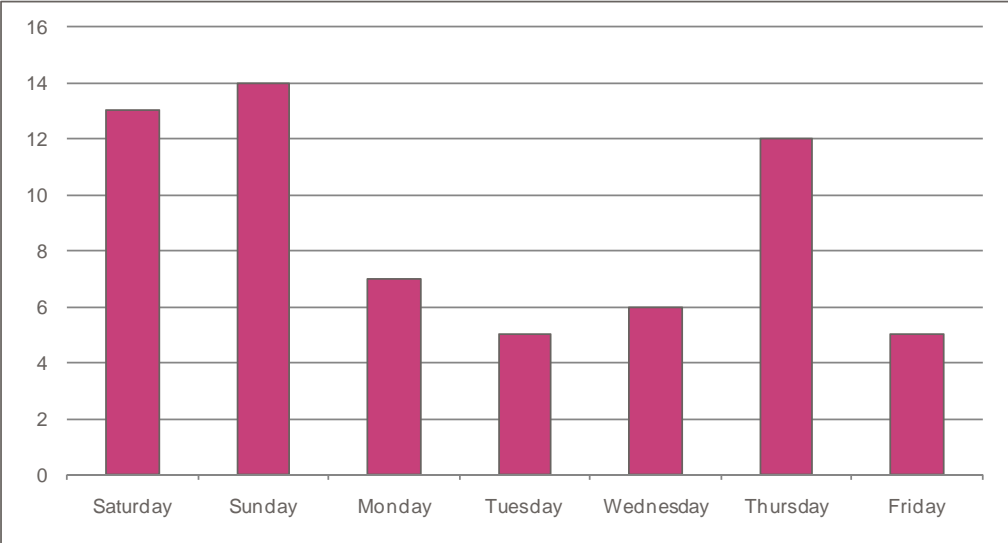
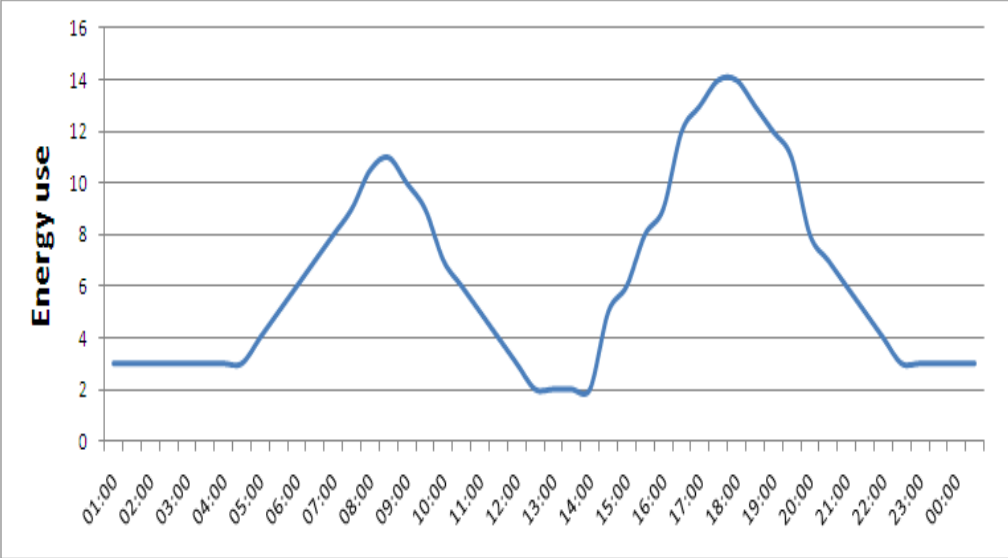
Another part of the smart metering system is the consumer display. The display is separate from the meter but can talk to it.

As a result, it can provide consumers with accurate up-to-date information about their energy consumption. Unlike a smart meter, which is stationary and may be relatively inaccessible (e.g. in a cupboard under the stairs), consumers can use these displays to monitor their energy use.

B

D

Graphs to show daily / weekly variation in energy use



Appendix C – Topic Guides

Topic Guide (Main Groups)

Introduction/ Warm-up questions (10-15 minutes)

- Participants introduce themselves
- Have they done anything different regarding heating etc. this winter compared to last? Why?

- How much interest do they take in the energy that they use?
- How important is it to monitor how much energy they use? Why? Any other reasons?
- What, if anything, do they do to monitor energy usage/consumption?
- Are they trying to reduce this/keep it stable or are they unconcerned?

- How easy or difficult do they find it to budget to pay for their energy?

- How do they pay their bills?

- **<NOT FOR PreP>** How much attention do they pay to their meter and bills? Do they take any/much interest in the way their bills are calculated? Do they check the meter readings against their bills?
- **<NOT FOR PreP>** How confident are they their bills are accurate? How often do meter readers visit? Would they like more / less frequent visits? Why? Do they receive many estimated bills? Do they take meter readings themselves and give them to their supplier? How do they do this? How often? Why?

- **<PreP>** Do they take much interest in how much energy they can use for each pound they spend?

Spontaneous awareness of Smart Meters/ Understanding of Smart Metering

- Awareness of anything/ways that could help them with monitoring energy usage?
- What could help them monitor energy usage?
- So what do people know about smart meters and smart metering....

COMPLETE SHORT INDIVIDUAL QUESTIONNAIRE ABOUT SMART METERS

- Based on what they know, would they like to have one?
- What are their initial expectations of smart meters based on this understanding?
- What would be the advantages/ disadvantages based on this understanding?
- How would it impact on their household use of energy? What do they think would change?

Prompted awareness of smart metering

- Prompted reaction to smart metering (**SEE BOARD A**)
 - What are their first thoughts/ initial reactions?
 - What do they think are the advantages of smart metering?
 - Do they have any concerns?
 - Where /how would they expect to hear about smart metering?

Design/ Functionality

USING PROPS GO THROUGH BASIC FEATURES OF SMART METERING AND GAUGE REACTIONS TO:

USE BOARD B – Visual showing a display of actual electricity usage by minute (so that you can see how much you are using at any one time)

- How do they feel about this?
- How big an advantage/concern is it to them? Why?
- Would it concern them if their energy company also had access to this information i.e. what they are using hour by hour, minute by minute?
- How would they like to receive this information? What are the advantages of that particular method?
 - an in-home display unit that they could put where they chose in their home
 - over the internet
 - direct to their mobile phone
- In what format would the display be most useful given that measures in kilowatt hours would be accurate, measures in pounds and pence merely approximate
- How useful would it be to have a display showing a running total of how much (approximately) they owed to their gas and electricity supplier (s)?
- Would this work for direct debit payers who are likely to be in credit in the summer and debt in winter?

USE BOARD C. - Explanation that display can help with identifying times of high-low energy usage

- Another option would be a traffic light system so
 - Green – normal
 - Amber – above average
 - Red – unusually high consumption
- Would this be helpful? Why/why not?
- What other options might they prefer?

USE BOARD D - Graph with energy consumed by day/week/month/longer

- How do they feel about this? What kind of display would be most helpful?
- How big an advantage/concern is it to them? Why?
- Would they expect the same information to be available for gas and electricity? Why?
- Would they (still) take their own readings/check their energy company's readings? Why/why not?
- How would they like to receive this aggregated information? What are the advantages of that particular method?
 - an in-home display unit that they could put where they chose in their home
 - over the internet
 - direct to their mobile phone
 - television
 - on their bill

Now based on what smart metering can do

- Assuming that there is an in home display (or if they prefer direct information to their mobile or on the Internet) do they think the smart metering will help them monitor consumption?
- What do they think they would do differently if they had a smart meter and in home display?
 - would they check bills differently?
 - would they monitor energy usage overall?
- From the basic functions described, do they think that smart metering is smart enough to meet their needs/ expectations? Why / why not?

Reaction to having one installed in their own home

- Now bringing this closer to home and thinking about having a smart meter and display unit as just described:
 - would they want one in their own home?
 - do they think they would use it? Why/ not?

- How much do they think they could save by using the smart meter to help them reduce energy usage? Is this enough to encourage them to use a smart meter? If not, what savings would they need to make to encourage them to use it? What if the price of energy were to double over the next five years? What difference would this make?
- Meters currently last around 10 – 15 years. Has anyone ever had their gas or electricity meter replaced? Or a pre-payment meter installed?
 - how well did that process work? What was good about it?
 - were there any difficulties?

Explain: In most homes the new gas and electricity meters would be installed in exactly the same place as the existing meters which would be removed. Each household would also be given a display unit.

- Do they have any concerns about the actual process of having a smart meter installed in their home? Explore fully concerns and what could overcome these.
- Thinking about actually having a display unit to use at home:
 - where would they expect to put it? Would the extent to which they use it depend on where it was? E.g. Different if used in kitchen/hallway/lounge/cupboard?
 - how important is the design/appearance? Would that affect whether they used it (e.g. plug-in display vs. wireless)?
 - the display unit may be a plug-in unit – how important/ desirable is the need for portability to different places within their home?
- What kind of instructions would be most helpful to them when they first start-up with the smart meter and display unit?
 - a demonstration by the person installing the smart meter
 - written instructions – how much detail would be necessary? Are we talking about a 4 page pamphlet or perhaps a much more detailed set of instructions? Would they be concerned about how easy it was to use the smart meter if there were more than 8 pages of instructions
 - Icons on the equipment itself?
- At or around the time of the meter visit, what would kind of additional information, possibly from the installation engineer, would they consider necessary/ acceptable/desirable?
 - energy efficiency assessment/advice?
 - benefits assessment/social tariff advice?
 - advising on the range of tariffs available
 - selling a different energy product or tariff (e.g. a fixed price deal or change in payment method)
 - selling an advanced in home display unit (perhaps with extra features or a different design)
 - and would this be acceptable/desirable as a follow-up visit after the installation?

- Engagement and support post installation
 - regular communication – e.g. on how people used their smart meter to reduce consumption and save money
 - customer care telephone lines
- What benefits would they perceive of having smart metering in their own home?
 - spontaneous - which of these is the most important?
 - prompt where appropriate and establish relative importance of the following issues: (ensure issues fully understood)

ROTATE THE ORDER

- No meter reader visits
 - No estimates in bills
 - Direct feedback on behaviour
 - Able to control expenditure
 - Better for the environment as can reduce emissions
- What are their fears/worries of having smart metering in their home?
 - spontaneous - which of these is the most important?
 - prompt where appropriate and if time available: (ensure issues fully understood)

ROTATE THE ORDER

- Worries about data privacy
 - Worries about remote disconnection by energy companies
 - Worries about ease of changing energy supplier
 - Worries about ease of changing tariff
 - Worries about changes in usage
 - Worries that might impact on lifestyle
 - Worries that the smart meter itself uses electricity / a power socket
 - Worries that there might be restrictions on energy use
 - Worries that might not understand/difficulties with technology/ergonomics/usability of meter
 - Worries about who will pay for smart meters (directly or indirectly)
 - Worries that they would not get any benefit once the novelty had worn off
-
- An assessment of the relative importance of all these benefits and concerns
 - Prompt for any differences there may be between the importance of benefits/ concerns for gas and electricity.
 - How might these concerns be overcome?

National roll-out

- What do they know about the national roll-out? Objectives of the roll-out? 2020 target?

PROMPT: Quick explanation – 2020 targets for every home to have a SM. Supplier led roll-out, so their supplier (or their contractors) will install the SM rather than a government led installation programme.

- What benefits do they perceive of the national roll-out:
 - prompt where appropriate on the following issues:
 - national effort to reduce emissions in line with targets
 - equipment to monitor usage/costs
 - support with keeping energy costs down for all consumers
- What concerns do they have about the national roll-out?
 - prompt where appropriate on the following issues:
 - some groups/ people may get missed out
 - older/poorer adults may cut back too much on energy use
 - some groups/ people may not understand how to use SM
 - perception that compulsory/ obligatory to have a SM
- What features should EVERY in home display have?
 - what information would help them manage their usage (e.g. billing information, tariff, current running cost, carbon use etc)?
 - would they prefer one display showing both gas and electricity usage or would they prefer to receive two separate displays?
 - what features might people be willing to pay extra for?
(Note whether people state they would like to opt-out of having one at all?)

- When the national roll-out starts, who do they think the first recipients should be (spontaneous)?
 - why those groups/ people? Are there any potential drawback in those people going first?
 - should particular groups be prioritised? Should it be first come, first served?
 - prompt for the following:
 - low income households/Fuel poor
 - older people/ those with disabilities
 - high energy users
 - those with pre-payment meters
- What do you think if the national roll-out was done by:
 - the energy company deciding on the best way to roll-out to their customers
 - Individual households demanding smart metering installations early ?
 - by region? Should certain regions be prioritised - rural/remote? What if their region was first? Or last?

Belts and braces

And lastly

- Do they think 'Smart' is a useful/ appropriate phrase to use when monitoring energy use?
- Why is this helpful/not? What, if any, other phrases/terms do they think could be more useful/appropriate?
- Would you want a smart meter?

SUM UP AND CLOSE

Topic Guide (Households)

Introduction/ Warm-up questions

- Participants introduce themselves – ages, whether out at school/college/working during the day?
- Have they done anything different regarding heating etc. this winter compared to last? Why?
- How much interest do they take in the energy that they use?
- Which appliances in their home do they think use the most energy?
- Do some household members take more interest than others in using/saving energy? Does the family ever discuss it? How important is it to monitor how much energy they use? Why? Any other reasons?
- What, if anything, do they do to monitor energy usage/consumption?
- Are they trying to reduce this/keep it stable or are they unconcerned?
- Is trying to reduce energy usage fun or is it boring/a nuisance? Does it feel pointless?
- Do (school/college) friends ever discuss saving energy.
- **<Bill payers>** How much attention do they pay to their meter and bills? Do they take any/much interest in the way their bills are calculated? Do they check the meter readings against their bills?
- **<Bill payers>** How confident are they their bills are accurate? How often do meter readers visit? Would they like more / less frequent visits? Why? Do they receive many estimated bills? Do they take meter readings themselves and give them to their supplier? How do they do this? How often? Why?

Spontaneous awareness of Smart Meters/ Understanding of Smart Metering

- Awareness of anything/ways that could help them with monitoring energy usage?
- What could help them monitor energy usage?
- So what do people know about smart meters and smart metering....
- Based on what they know, would they like to have one?
- What are their initial expectations of smart meters based on this understanding?
- How would it impact on their household use of energy? What do they think would change?

Prompted awareness of smart metering

- Prompted reaction to smart metering (**SEE BOARD A**)
 - what are their first thoughts/ initial reactions?
 - what do they think are the advantages of smart metering?
 - do they have any concerns?
 - where /how would they expect to hear about smart metering?

Design/ Functionality

USING PROPS GO THROUGH BASIC FEATURES OF SMART METERING AND GAUGE REACTIONS TO:

USE BOARD B – Visual showing a display of actual electricity usage by minute (so that you can see how much you are using at any one time)

- How do they feel about this?
- How big an advantage/concern is it to them? Why?
- How would they like to receive this information? What are the advantages of that particular method?
 - an in-home display unit that they could put where they chose in their home
 - over the internet
 - direct to their mobile phone
- In what format would the display be most useful given that measures in kilowatt hours would be accurate, measures in pounds and pence merely approximate
- How useful would it be to have a display showing a running total of how much (approximately) they owed to their gas and electricity supplier (s)?
- Would this work for direct debit payers who are likely to be in credit in the summer and debt in winter?

USE BOARD C. - Explanation that display can help with identifying times of high-low energy usage

- Another option would be a traffic light system so
 - Green – normal
 - Amber – above average
 - Red – unusually high consumption
- How would they see this working in their household?
- What appliances do they have that would tip it into red? Who uses these?
- Would this be helpful? Why/why not?
- What other options might they prefer?

USE BOARD D - Graph with energy consumed by day/week/month/longer

- How do they feel about this? What kind of display would be most helpful?
- How big an advantage/concern is it to them? Why?
- Would they expect the same information to be available for gas and electricity? Why?
- Would they (still) take their own readings/check their energy company's readings? Why/why not?
- How would they like to receive this aggregated information? What are the advantages of that particular method?
 - an in-home display unit that they could put where they chose in their home
 - over the internet
 - direct to their mobile phone
 - television
 - on their bill

Reaction to having one installed in their own home

- Now bringing this closer to home and thinking about having a smart meter and display unit as just described:
 - would they want one in their own home?
 - do they think they would use it? Why/ not?
 - who in the household would look at this? Would they show it to other household members? Would the family talk about the display and how it would help them use energy? Would it cause/prevent arguments? Why?
- Assuming that there is an in home display (or if they prefer direct information to their mobile or on the Internet) do they think the smart metering will help them monitor consumption?
- What do they think they would do differently if they had a smart meter and in home display?
 - would they check bills differently?
 - would they monitor energy usage overall?
- From the basic functions described, do they think that smart metering is smart enough to meet their needs/ expectations? Why / why not?
- Meters currently last around 10 – 15 years. Have they ever had their gas or electricity meter replaced? Or a pre-payment meter installed?
 - how well did that process work? What was good about it?
 - were there any difficulties?

Explain: In most homes the new gas and electricity meters would be installed in exactly the same place as the existing meters which would be removed. Each household would also be given a display unit.

- Do they have any concerns about the actual process of having a smart meter installed in their home? Explore fully concerns and what could overcome these.
- Thinking about actually having a display unit to use at home:
 - where would they expect to put it? Would the extent to which they use it depend on where it was? E.g. Different if used in kitchen/hallway/lounge/cupboard?
 - how important is the design/appearance? Would that affect whether they used it (e.g. plug-in display vs. wireless)?
 - the display unit may be a plug-in unit – how important/ desirable is the need for portability to different places within their home?

- What kind of instructions would be most helpful to them when they first start-up with the smart meter and display unit?
 - a demonstration by the person installing the smart meter
 - written instructions – how much detail would be necessary? Are we talking about a 4 page pamphlet or perhaps a much more detailed set of instructions? Would they be concerned about how easy it was to use the smart meter if there were more than 8 pages of instructions
 - Icons on the equipment itself?
- At or around the time of the meter visit, what would kind of additional information, possibly from the installation engineer, would they consider necessary/ acceptable/desirable?
 - energy efficiency assessment/advice?
 - benefits assessment/social tariff advice?
 - advising on the range of tariffs available
 - selling a different energy product or tariff (e.g. a fixed price deal or change in payment method)
 - selling an advanced in home display unit (perhaps with extra features or a different design)
 - and would this be acceptable/desirable as a follow-up visit after the installation?
- Engagement and support post installation
 - regular communication – e.g. on how people used their smart meter to reduce consumption and save money
 - customer care telephone lines
- What benefits would they perceive of having smart metering in their own home?
 - spontaneous - which of these is the most important?
 - prompt where appropriate and establish relative importance of the following issues: (ensure issues fully understood)

ROTATE THE ORDER

- No meter reader visits
 - No estimates in bills
 - Direct feedback on behaviour
 - Able to control expenditure
 - Better for the environment as can reduce emissions
-
- What are their fears/worries of having smart metering in their home?
 - spontaneous - which of these is the most important?
 - prompt where appropriate and if time available: (ensure issues fully understood)

ROTATE THE ORDER

- Worries about data privacy
- Worries about remote disconnection by energy companies
- Worries about ease of changing energy supplier
- Worries about ease of changing tariff
- Worries about changes in usage
- Worries that might impact on lifestyle
- Worries that the smart meter itself uses electricity / a power socket
- Worries that there might be restrictions on energy use
- Worries that might not understand/difficulties with technology/ergonomics/usability of meter
- Worries about who will pay for smart meters (directly or indirectly)
- Worries that they would not get any benefit once the novelty had worn off
- An assessment of the relative importance of all these benefits and concerns
- Prompt for any differences there may be between the importance of benefits/ concerns for gas and electricity.
- How might these concerns be overcome?

National roll-out

PROMPT: Quick explanation – 2020 targets for every home to have a SM. Supplier led roll-out, so their supplier (or their contractors) will install the SM rather than a government led installation programme.

- What features should EVERY in home display have?
 - what information would help them manage their usage (e.g. billing information, tariff, current running cost, carbon use etc)?
 - would they prefer one display showing both gas and electricity usage or would they prefer to receive two separate displays?
 - what features might people be willing to pay extra for?
- (Note whether people state they would like to opt-out of having one at all?)

- When the national roll-out starts, who do they think the first recipients should be (spontaneous)?
 - why those groups/ people? Are there any potential drawback in those people going first?
 - should particular groups be prioritised? Should it be first come, first served?

Belts and braces

And lastly

- Do they think 'Smart' is a useful/ appropriate phrase to use when monitoring energy use?
- Why is this helpful/not? What, if any, other phrases/terms do they think could be more useful/appropriate?
- Would you want a smart meter?

SUM UP AND CLOSE

Appendix D – Self completion questionnaire



FDS International Ltd
 Hill House, Highgate Hill
 London N19 5NA
 Tel: 020 7272 7766 Fax: 020 7263 5202

C1	C2	C3	C4	C5	C6	C7
7	7	8	1			

Smart Meter Self Completion Questionnaire
 7781/hg

Name: _____

Q1a: Have you heard of SMART METERS?

- Yes 1 GO TO Q2
- No 2 GO TO Q1b

Q1b: What do you think a SMART METER is? NOW PLEASE GO TO Q4.

Q2: What do you understand by the term 'Smart Meters'?

Q3: How have you heard about Smart Meters?

Q4: Based on what you have heard, would you want a smart meter at home?

- Yes 1
- No 2
- Don't know 3