



Department for
Business, Energy
& Industrial Strategy

SMART METER CUSTOMER EXPERIENCE STUDY

A report on post-installation and longer-term
experiences of smart meter customers



November 2018

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Smart Meter Customer Experience Study

Main report

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Glossary of key terms

Smart meter: the next generation of gas and electricity meter. Smart meters can communicate directly with energy suppliers by sending and receiving information about the amount of energy being used. Smart meters are installed by a professional engineer representing an energy supplier. Smart meters can work in prepayment or credit mode.

In-home display (IHD): a portable device with a digital display that shows current and past energy consumption and how much it is costing or will cost. Smart meter customers are offered an IHD free of charge to accompany their smart meter.

Smart meter customers: customers listed by suppliers as having an electricity, or electricity and gas smart meter (there are currently no gas-only smart households).

Credit customers: customers who use energy and pay for it through direct debit or on the receipt of a bill, usually on a monthly or quarterly basis (one example of 'payment type').

Prepay customers: customers who pay for their energy by using a smart meter in prepayment mode and are therefore required to top-up their credit balance to ensure energy is available to their home before they need to use the energy (the other example of 'payment type' in this report).

Vulnerable customers: customers who are considered to be in 'vulnerable circumstances'. Customers may fall under this definition if they: live with a long-term illness, health problem or disability; have limited or no experience of digital technology; live in a low income household; are aged 75 and over and/or alone or live in a rural or off-gas grid household (sometimes in combination with another factor). The surveys recorded these details for all customers. Where the term 'vulnerable' is used in this report further detail is provided about the specific group of respondents being referred to.

Smart meter customer journey: the steps taken by an energy supplier and a customer from first raising awareness of smart meters to arranging installation visits, through the installation process (including the provision of information and advice prior to and at the visit) and sometimes involving the receipt of follow-up contact or information post-installation. The smart meter customer journey is likely to differ from supplier to supplier.

App: in this report, this refers to an application which provides account management and potentially information about a customer's energy consumption. It is usually downloaded by the customer to a mobile device.

Household baseline: the amount of energy a household uses on a typical day.

Energy budget: a target level of energy consumption that a household sets for itself. An energy budget can be set on some IHDs.

Traffic lights: an element of the display on most IHDs which indicates changes in the level of (near) real-time electricity use; indicated through a change in the light colour rather than through more detailed information in numeric form.

Post-installation phase: the first phase of this research. This consisted only of the **Post-installation survey**, a telephone survey of 2,015 smart meter customers within 3 months of their smart meter installation.

Follow-up phase: the second phase of this research. This consisted of the **Follow-up survey** with 825 first phase participants, and **qualitative interviews** with 50 first phase participants.

1. Introduction

Background to the research

The Government is committed to ensuring that every home and business in the country is offered a smart meter by the end of 2020. Smart meters are the next generation of gas and electricity meters and communicate directly with energy suppliers. They are consequently expected to deliver a range of benefits for consumers. These include removing the need for manual meter reads, ending estimated billing, making switching between suppliers smoother and faster, and helping consumers take control of their energy consumption by providing them with near real-time information on their energy consumption (via an In-Home Display (IHD)).

The Department for Business, Energy and Industrial Strategy (BEIS) commissioned Ipsos MORI to undertake a longitudinal research study to explore consumer experiences of smart metering over time; beginning with their decision to get a smart meter, through the installation process itself (including demonstration of an in-home display and energy saving advice provided by the installer), to almost one-year after installation.

This research has served to test, update, and further validate, the evidence base on customer experiences and impacts produced earlier in the roll-out by the Early Learning Project (ELP).¹ In particular, the ELP research identified three transition points that consumers must pass through in order to make lasting changes to their energy consumption:

- Engagement with installation of smart meter;
- Engagement with (information generated by) the smart meter;
- Making changes in energy consumption.

Another aim was to capture the impact of developments in the roll-out since the ELP, including the implementation of the Smart Meter Installation Code of Practice (SMICoP)², Smart Energy GB's establishment and communications campaigns, and an expanding smart meter population, with smart prepay meters now being rolled out at scale.

¹ DECC, '[Smart Metering Early Learning Project and Small-Scale Behaviour Trials](#)', 2015.

² Ofgem, '[Smart Metering Installation Code of Practice \(SMICoP\)](#)', 2013 (latest version 2018).

Research aims and objectives

The following overarching research questions were set for this study:

RQ1: How satisfied are smart meter customers with their overall smart meter experience, and why? How and why does this change with time since the installation?

RQ2: How frequently and for what purpose do smart meter customers with an IHD use it, and how does this vary over time?

RQ3: Are customers making use of other smart meter-enabled energy consumption feedback devices, and for what purpose?

RQ4: To what extent, in what circumstances (customer characteristics, household context) and through what mechanisms (information provision through customer journey), do customers report smart metering to have influenced their adoption of more energy efficient behaviours?

Two phases of primary data collection were carried out during the study, including a two-wave quantitative survey and qualitative in-depth interviews. While each generated evidence to answer the overarching research questions above, additional objectives and areas of focus were targeted by certain stages. This is explained in more detail below.

2. Research method

Data collection was carried out in two phases. The primary data collection method was a representative, two-wave longitudinal telephone survey of customers of two GB energy suppliers. The first wave was carried out within approximately 3 months of a smart meter installation, with the second almost a year post-installation as part of the follow-up phase. The second component of the follow-up phase was a set of qualitative interviews with a selection of the survey respondents.

Post-installation phase: Post-installation survey

The first phase of the research (the Post-installation phase) was a quantitative telephone survey of 2,015 smart meter customers of two energy suppliers. These customers had installations over January and early-February 2017 and the respondents were present for their smart meter installation (and aged over 18). The interviews typically lasted around 23 minutes and took place on average 10 weeks after the installation.

Designing the survey

The survey was designed by Ipsos MORI and BEIS and was cognitively tested and piloted before use.³ The survey gathered information from respondents about:

- Energy-related attitudes and behaviours;
- Motivations for having a smart meter installed and sources of information about smart metering;
- Experiences of the installation visit, including whether they recalled receiving a demonstration of the IHD and/or energy saving advice from the installer;
- Recall of follow-up information provided by their supplier in the immediate weeks following their installation visit;
- Use of an IHD, app and/or online account.

Details of the approach to sampling, weighting and the full questionnaire can be found in the Technical Report.

³ Detail on refinements following the pilot can be found in the Technical Report.

Follow-up phase: Follow-up survey

The first component of the Follow-up phase was another telephone survey with the same group of smart meter customers, conducted almost a year after the installation visits in late 2017 (mid-November to mid-December).

Designing the survey

The follow-up survey was again designed by Ipsos MORI and BEIS and covered:

- Energy attitudes and behaviours, tracking these between surveys and across time;
- Reported changes to energy consumption;
- Longer-term follow-up from energy suppliers and information provided to customers at various stages of the process;
- Use of the IHD, apps and online accounts;
- Self-reported impact of smart metering on understanding of energy consumption and energy behaviours.

Follow-up phase: Qualitative interviews

The second component of the Follow-up phase was qualitative research via a series of in-depth interviews, again carried out between mid-November and mid-December 2017.

The qualitative research sought to complement the quantitative survey data by generating 'deeper' insights, helping to explain trends in the quantitative data and exploring the more complex aspects of customer experiences and impacts. 50 in-depth, face-to-face interviews were conducted with participants from the Post-installation phase.

These interviews covered in detail each aspect of the customer journey, from when participants first heard about smart meters and their motivation to have one installed, through to their experience of the installation process, their subsequent engagement with the smart meter and IHD, and their perceived changes in attitudes towards energy and their energy-related behaviours. Where possible, participants were also asked to demonstrate to the interviewer how they used the IHD and/ or app.

The full discussion guide and details of the approach to analysis and synthesis of the research evidence is included in the Technical Report.

Factors to consider when interpreting the findings from this research

Generalising the results to all smart meter customers

The surveyed sample was representative of the customers of the two energy suppliers who had smart meter installations during January and early-February 2017. While this has enabled the study to gather learning from the experiences of a wide range of customers,

including those on different payment types and in different types of household, it should be noted that these customers may not be typical of all smart meter customers. For example, the smart meter customers included in this study:

- Had successful smart meter installations, and so do not represent those whose installations were unsuccessful
- May have been influenced by the targeting and engagement approaches suppliers were using at this time;
- Will have been using the IHD and other smart enabled feedback devices (for example, apps) which were on offer to them from their suppliers at the time; and,
- Will reflect the demographic characteristics of the customer bases of the two suppliers involved.

This means that although the findings are representative of a substantial number of smart meter customers, they may not fully reflect the experiences, attitudes and behaviours of the wider smart meter customer population, or those who are yet to get a smart meter.

Exploring the impacts of the smart meter and/or IHD on energy-related attitudes and behaviours

The findings presented in this report rely on self-reported changes to attitudes and behaviours, rather than analysis of actual energy consumption data. Data on attribution of changes in behaviour to the smart meter are likely, therefore, to be subject to overclaim or underclaim.

Where Key Driver Analysis (KDA) results are presented it should be recognised that while these provide preliminary evidence on the relationship between drivers and outcomes, it does not confirm the direction of these relationships. Taken on its own, it cannot explain the reasons why a relationship has been observed. The KDA is also only able to measure the relative importance of elements of the customer experience for which data was collected during the survey. It is likely that the outcomes being explored will have been influenced by other factors and the interactions and impacts of these factors on the drivers and outcomes is unknown.

Reliance on participant recall

As with all survey and interview-based research, the findings are subject to the accuracy of participant recall, known as 'recall bias'. Many factors influence the extent and impact of recall bias. Examples in this context could include the saliency of information and the mode by which it was communicated, the participant's level of interest in the subject of the question or the length of time between the event (i.e. a smart meter installation) and being asked to recall it in a survey.

Impact of participation in research on findings

Most qualitative interview participants said that participation in the survey or interview had not affected their behaviour, but for some it seemed to have prompted customers to think

more about their energy consumption or interact differently with their smart meters or IHDs. For example, some participants said the survey caused them to become more aware of their energy consumption or renewed their interest in using the IHD.

Statistical significance for survey findings

Findings from any survey have a margin of error when a sample of the population is interviewed, as opposed to the entire population. Confidence intervals for various sample sizes related to this survey are provided in the Technical Report.

Where views varied either between the quantitative and qualitative research strands, or between different groups of customers, this is clearly stated. This report only highlights differences in the reported behaviours and attitudes between specific groups of customers where the difference is statistically significant at the 95% confidence level. However, not all statistically significant differences have been reported – only those which are relevant to the research questions and hypotheses, have a plausible theoretical explanation or are of high magnitude are included.

Percentages are presented as whole numbers therefore on occasion percentages may sum to more or less than 100% due to rounding.

The full survey dataset is published alongside this study in the data archive, and more information on statistically significant differences can be found in the survey data tables published alongside this report at <https://www.gov.uk/government/publications/smart-meter-customer-experience-study-2016-18>.

Nomenclature

This report refers to the findings from the two phases of the research, including two surveys and qualitative interviews, as described above. ‘Survey respondents’ is used to refer to findings from the quantitative surveys. Unless otherwise stated, the survey results refer to the Follow-up survey, which took place almost a year after installation. Any survey results from the first survey are described as pertaining to the Post-installation survey. Findings from the qualitative in-depth interviews are referred to as being from the qualitative interviews, or ‘qualitative interview participants’.

3. Provision of advice and information during the smart meter customer journey

This chapter explores the prevalence and format of information and advice provision to respondents at different stages of the smart meter customer journey. Later chapters of this report explore levels of satisfaction with, and the impact of, these experiences.

Summary of information and advice provision

- Most respondents said their supplier had initiated the installation process (73%), as opposed to the respondents initiating it themselves (24%)
- Energy suppliers were the most commonly recalled source of information about smart meters (66%), followed by word-of-mouth sources (33%) and Smart Energy GB (29%)
- Uptake of the In-Home Display (IHD) offer was near universal; 92% recalled the offer and 95% accepted it
- Almost all (97%) recalled receiving some form of guidance on how to use their IHD, and 76% reported receiving a demonstration
- Half (51%) of survey respondents recalled receiving advice during their installation on how they could save energy - around two-thirds (63%) of these reported that they were given general advice, and just over half (53%) reported receiving printed advice to keep
- A minority recalled receiving information about how their energy consumption data would be used and stored (16%) – although this question was particularly susceptible to recall bias
- Suppliers can ask to collect half-hourly consumption data – a third (33%) recalled being asked to share this data, and 94% of those agreed
- 38% recalled receiving follow-up contact from their supplier in the year since their installation – mostly to give further information about energy consumption and how to reduce it

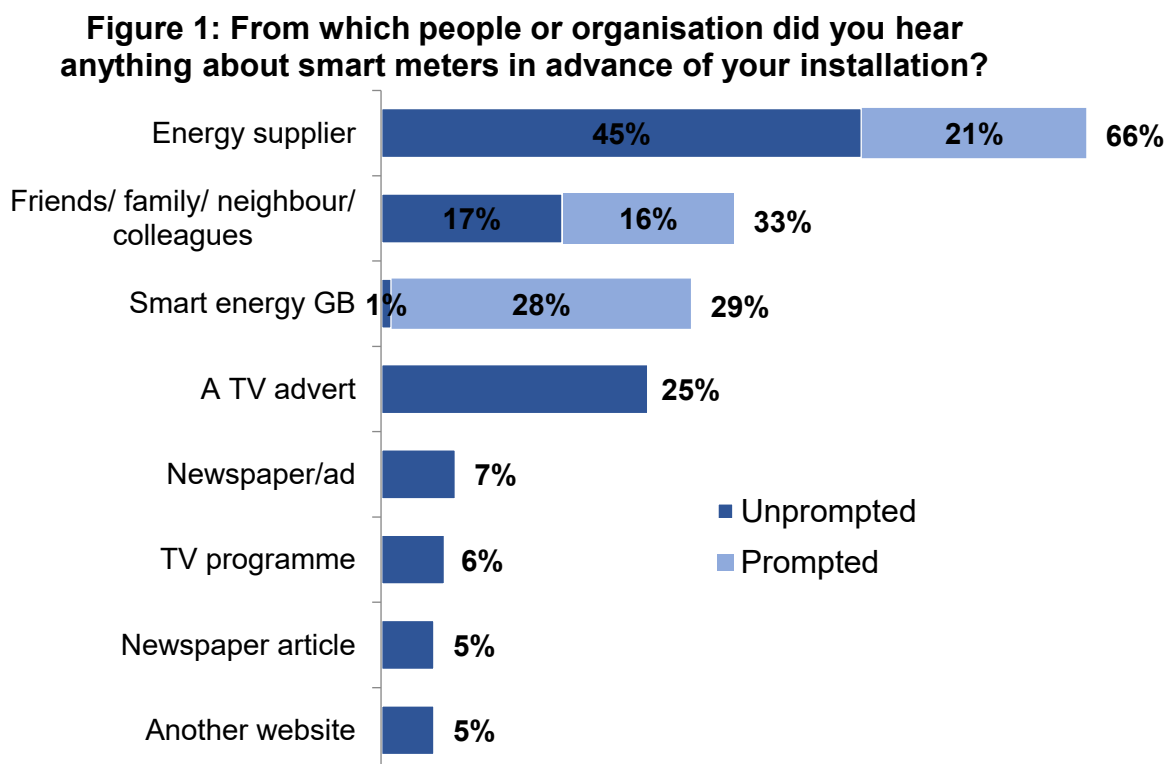
Information prior to installation and reasons for getting a smart meter

Most survey respondents reported being contacted by their energy supplier about getting a smart meter installed (73% supplier-led), rather than contacting the supplier themselves to request one (24% customer-led).

Many more prepay respondents than credit respondents had initiated the installation themselves (57% compared to 19%). This disparity may have reflected varying supplier marketing strategies to prepay and credit customers in late 2016. The qualitative interviews found that some prepay customers contacted suppliers about a smart meter with a view to getting a cheaper tariff after seeing advertisements.

Younger respondents were also more likely to have initiated the installation themselves – for example, four in ten 18-34 year olds had done so (40%), compared with one in six aged 65 and over (16%).

The most commonly recalled source of information about smart meters before the installation was energy suppliers (66%). Word-of-mouth (through friends, family or colleagues) was another commonly cited source, as well as Smart Energy GB (when prompted) and TV adverts in general, as shown in Figure 1 below.



Base: all Post-installation survey respondents – 2,015

Note: 'energy supplier', 'friends/family/neighbour/colleagues' and 'Smart Energy GB' shows both prompted and prompted responses. The other sources were not prompted for.

Prepay respondents were more likely to have heard anything about smart meters from friends, family, neighbours or colleagues (43%) and less likely to have heard from their supplier (54%). This may help explain the finding that they were more likely to have initiated the installation themselves. Vulnerable respondents were also among the most likely to have heard about smart meters via word of mouth (40%). The qualitative interviews found that in some cases the friends, family and neighbours of vulnerable participants had recognised the potential benefits of smart metering and had helped raise their awareness of them (particularly if they already had a smart meter themselves).

Qualitative interview participants who were private renters tended not to have involved their landlord in their decision to have a smart meter, and this was not raised by any of these participants as an issue at any stage of their smart meter customer journey to date. Instead, similarly to owner occupiers, renters reported being contacted by their supplier, or seeing an advert for a smart meter, and followed the usual route of agreeing to and booking the install. However, it should be noted that the private renters involved in this study were all bill payers due to the way the survey sample was accessed via supplier customer databases - the study did not contact customers whose energy bills were paid by their landlord, who may have had a different experience.

Motivations for having a smart meter installed were also similar to those of owner occupiers, for example, wanting to have an IHD that would help them to see their usage, to feel more in control of their usage and spending, and to access more flexible top-up options (among prepay private renters).

Information and advice during installation

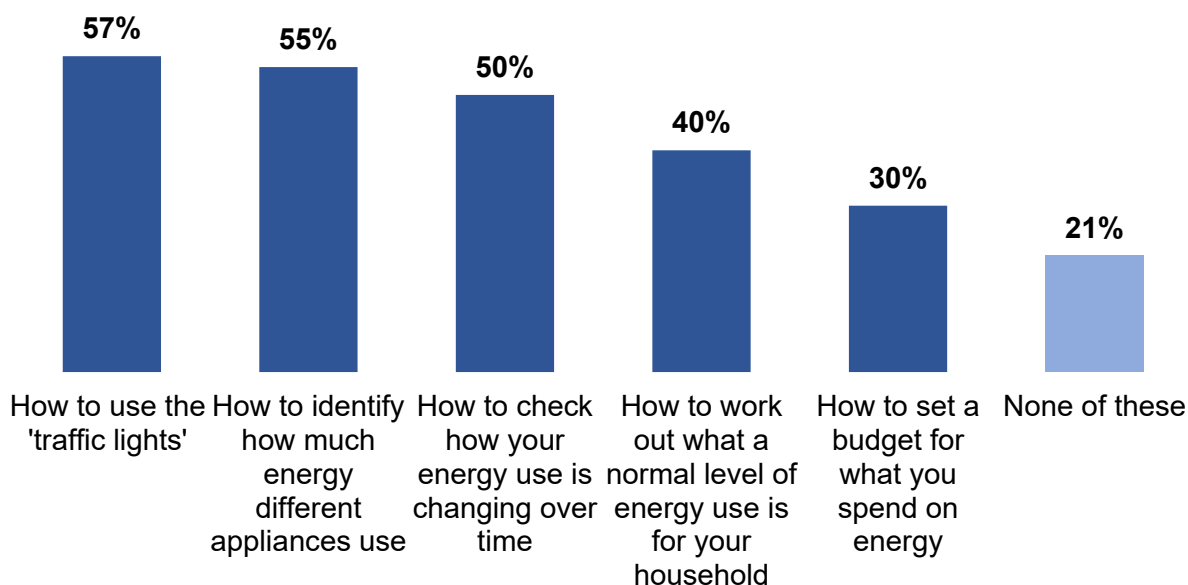
Information and advice relating to the IHD

Nine in ten respondents (92%) recalled being offered an in-home display (IHD), and 95% of these said they accepted the offer (meaning 88% of all respondents reported having an IHD, henceforth referred to as 'IHD owners'). The majority recalled being told about the offer of an IHD in advance of the installation visit (59%).

Almost all IHD owners recalled receiving guidance of some kind on how to use their IHD (97%). The majority recalled being given a booklet to read during their demonstration (87%), being given general advice on how to use it (81%) and being shown through each screen of the IHD (77%). Overall, three quarters (76%) of respondents with an IHD reported receiving a demonstration from the installer, with a demonstration of the 'traffic

lights' most commonly recalled (57%). Four in ten (40%) recalled being shown how to set a baseline⁴, and three in ten (30%) how to set a budget.

Figure 2: And which, if any, of the following did the installer show you while demonstrating the in-home display / smart energy display?



Base: all Post-installation survey IHD owners – 1,763

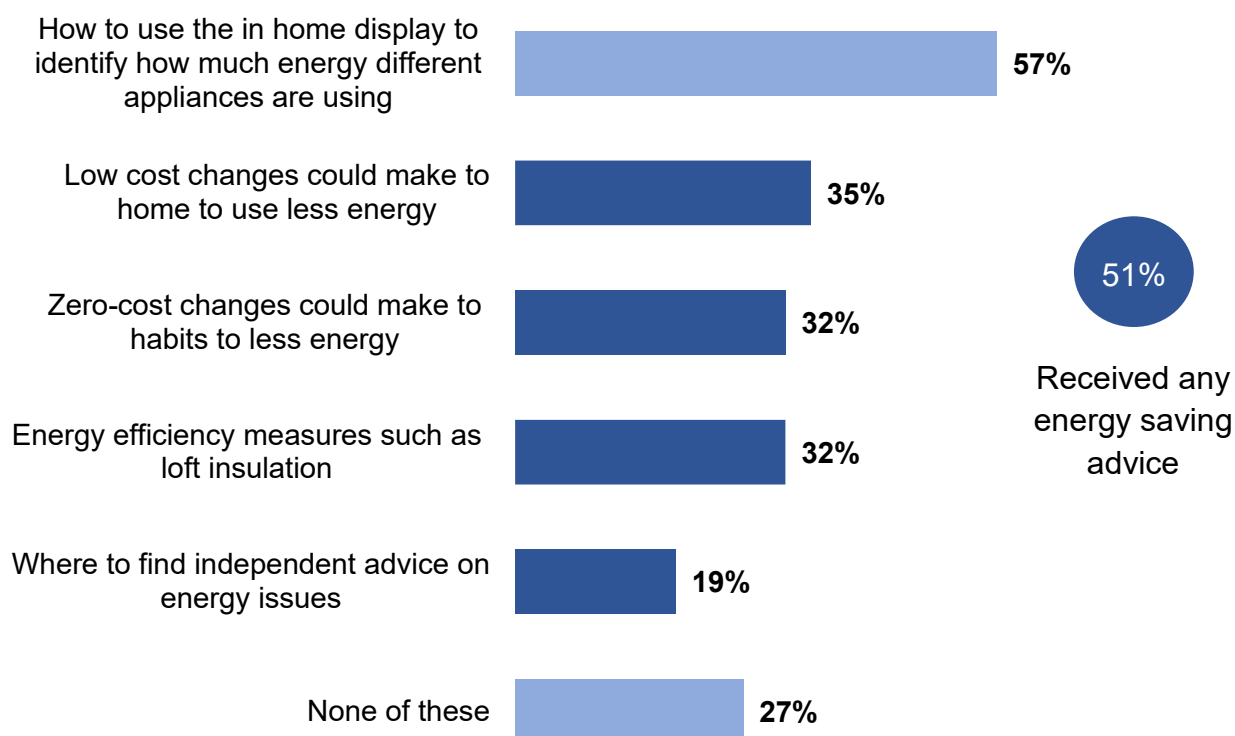
Survey respondents aged 65 or over, and those in households of three or more, were more likely to recall receiving these demonstrations. More prepay respondents recalled being shown how to set a baseline ('a normal level of energy consumption' – 47%) and budget (30%), although they were no more likely to ultimately have done either of these things.

Information and advice relating to energy saving

Half (51%) of survey respondents recalled receiving advice or information from the installer about a range of energy efficiency measures and/or low or zero-cost changes that could be made to their home or habits (referred to overall in this report as 'energy saving advice'). One in ten (10%) recalled being given all four types of advice asked about in the survey, while one in four (27%) did not recall receiving any energy saving advice (shown in Figure 3 below).

⁴ Setting a baseline refers to a customer using the IHD to work out how much energy their household uses in a typical day, week, or month

Figure 3: Which, if any, of the following did you receive advice or information about from the installer who fitted your smart meter?



Base: all Post-installation survey respondents – 2,015

Those who recalled receiving energy saving advice reported receiving this in the following ways:

Given some general advice verbally (63%)

Some qualitative interview participants recalled being given energy saving advice at the time of installation, such as being advised to use central heating over portable gas heaters, reducing the amount of water boiled in the kettle or switching electrical appliances off standby when they were not in use.

Several qualitative interview participants did not recall receiving any advice, saying the installer completed the installation quickly and left. The interviews suggested wide variation in how often and how the advice was delivered by installers, even when they were from the same supplier.

Given printed information to keep (53%)

A number of qualitative interview participants recalled being given a leaflet to keep. Some read the material, and used it as a reference, while others said they had not engaged with it. Vulnerable respondents (62%) were more likely to recall receiving this type of advice than others (52%).

Tailored advice, following questions about their home and habits (29%)

Prepay respondents (36%) were more likely to recall receiving this type of advice than credit respondents (28%).

A handful of respondents were shown a video (1%).

Information and advice relating to energy consumption data usage and storage

A minority (16%) recalled being given information about how their energy supplier uses and stores their energy consumption data over time, with recall higher amongst younger survey respondents (26%). 73% did not recall receiving this information, whilst one in ten (11%) said they did not know if they had received it. It is important to note that this finding is particularly susceptible to recall bias, as this information is likely given in advance of installation and may be provided via documentation or a 'data guide'.

Of those who did recall this information, the majority either didn't have any queries about it (44%) or felt the information answered any queries they had (25%). A further one in four felt it answered some of their queries (24%), with only a very small minority feeling it did not answer any of their queries (3%).

Just over a third of respondents (36%) said they would like to receive more information on how their data is stored and who can access it.

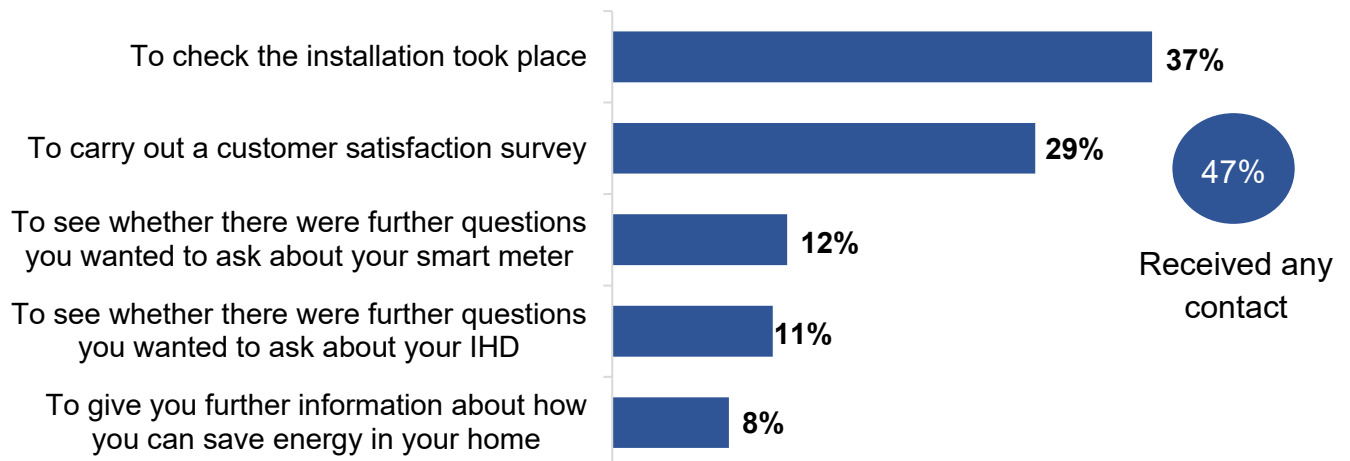
Suppliers can also ask customers for permission to collect half-hourly consumption data from their smart meter if they so wish. A third (33%) recalled being asked to share half-hourly data with their supplier. Almost all of these agreed to do so (94%). 42% reported that their supplier did not ask them this, and one in four (26%) did not know if they were asked or not.

Information and advice after installation

Follow-up contact made in the weeks following installation

Nearly half of survey respondents (47%) recalled receiving some form of follow-up contact from their supplier when spoken to in the weeks following installation – most commonly to check that the installation had taken place (37%) or a customer satisfaction survey (29%). A minority of respondents recalled being contacted with the offer of further information about their smart meter (12%), IHD (11%) and energy saving advice (8%). Follow-up contact was recalled mostly to be via phone or email, with some energy saving advice received via direct mail.

Figure 4: Has your energy supplier contacted you since your installation visit about any of the following, or not? Please say yes to all that apply



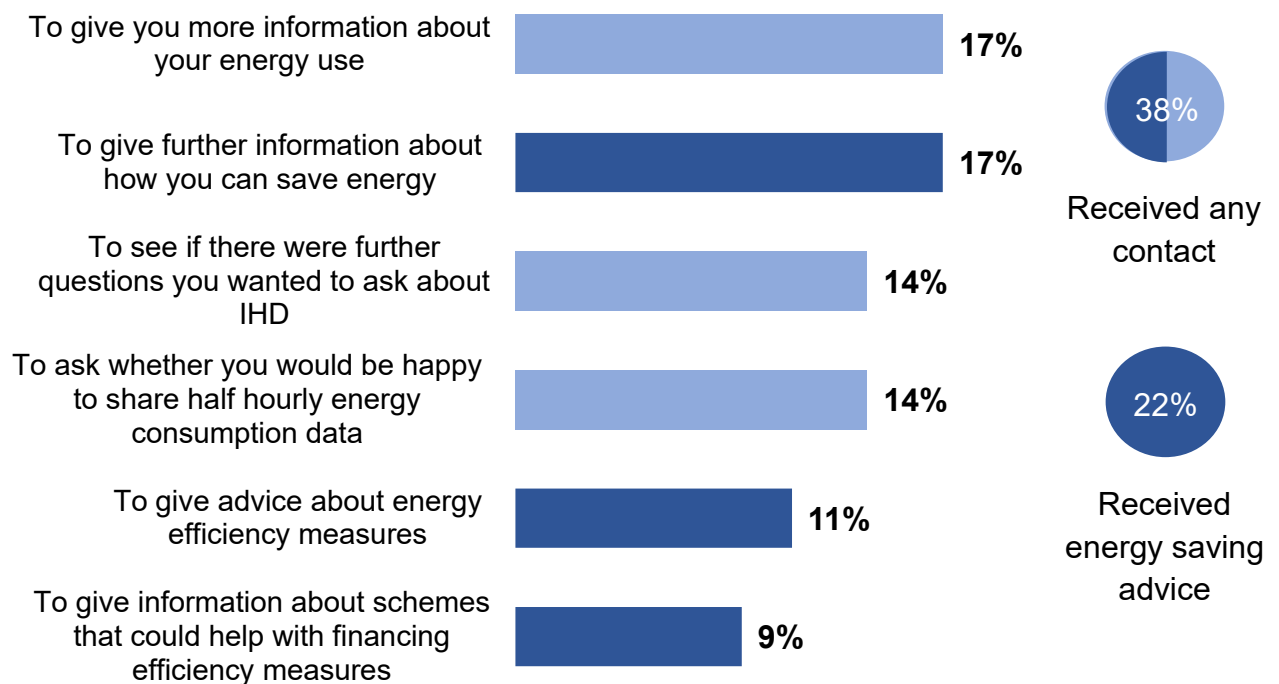
Base: all Post-installation survey respondents – 2,015

Follow-up contact made up to a year following installation

Just over a third (38%) recalled receiving follow-up contact throughout the year, excluding initial contact made to organise installation.⁵ This was mostly to offer more information about how much energy they use and how they could reduce their consumption. The chart below shows which type of energy advice was given by suppliers via follow-up contact – one in five Follow-up survey respondents (22%) were contacted with some form of energy saving advice.

⁵ This question asked respondents about any contact received since installation. In theory it should include all contact mentioned at the first survey, plus any contact more than 3 months after installation. However, this question may be particularly susceptible to recall bias if contact was received long before the Follow-up survey.

Figure 5: Has your energy supplier contacted you since your installation visit about any of the following, or not?



Base: all Follow-up survey respondents – 825

The impact of information and advice at different points of the customer journey is explored in later chapters.

4. Smart meter satisfaction and advocacy

This chapter outlines smart meter customer satisfaction and advocacy levels and explores the reasons for this.

Summary of satisfaction among smart meter customers

- Nine in ten (89%) respondents were satisfied with their smart meter installation
- Satisfaction with smart meters was high and sustained across the year – three-quarters (74%) of Follow-up survey respondents said they were satisfied with their smart meter (and IHD), whilst eight in ten (80%) said the same just after installation
- Prepay respondents were particularly more likely to say they were satisfied with their smart meter (84% Post-installation, 80% Follow-up)
- The most common reasons given for satisfaction were visibility of energy consumption and increased convenience - especially for prepay customers, of which 88% said topping up had become easier since getting a smart meter
- Lower levels or falls in satisfaction often reflected low or reduced interest in the smart meter and/or IHD – although for some it related to technical issues, or a lack of information on how they could get the most out of their smart meter and/or IHD
- Eight in ten (80%) of Post-installation survey respondents gave a score of 6 or above for likelihood to recommend a smart meter to a friend, family or colleague⁶ - three-quarters (76%) said the same nearly a year later
- Prepay respondents were particularly more likely to say they would recommend a smart meter – 83% gave a score of 6 or above (compared to 74% of credit respondents), and 60% gave a score of 10 out of 10 (compared to 35% of credit respondents)
- Eight in ten (81%) Follow-up survey respondents reported satisfaction with their energy supplier – this compares which compares favourably to

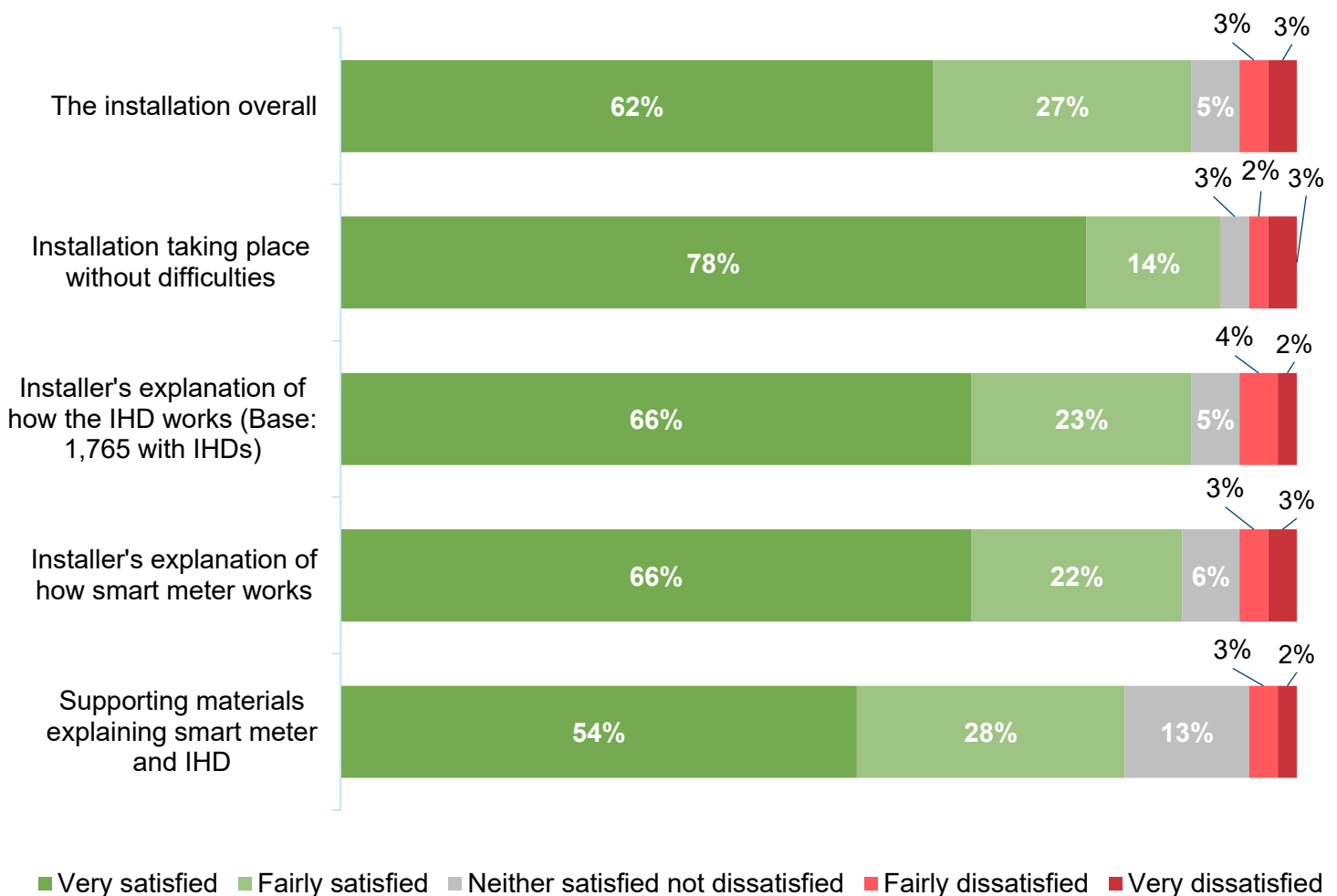
⁶ On a scale of 1 (definitely would not recommend) to 10 (definitely would recommend).

measures amongst non-smart meter customers (75%, Ofgem Consumer Engagement Survey 2018)

Satisfaction with the smart meter installation visit

Nine in ten respondents (89%) were satisfied with the overall installation of their smart meter, whilst only 6% reported they were dissatisfied. Two thirds (62%) said they were very satisfied.

Figure 6: Thinking about the process of installing the smart meter, how satisfied or dissatisfied were you with the following aspects of the installation?



Base: all Post-installation survey respondents – 2,015 (unless otherwise stated)

As shown in Figure 6, nearly all respondents were satisfied that the installation took place without any major difficulties (93%). This is in the context that 90% reported their smart meter installation to have been successful on the first attempt. Nearly nine in ten were satisfied with the explanation provided by the installer about how the smart meter worked

(88%) and how the IHD worked (88%), and over four-fifths were satisfied with the supporting materials given at this time (81%). These experiences were generally consistent across different customer groups.

Many of the qualitative interview participants attributed their satisfaction with the installation to feeling that the technical installation of the meter had gone smoothly. Some attributed it to the visit had taking less time than they expected. In most cases, participants also reported having received the information they felt they needed from the installer, for example about how the smart meter worked or how to use the IHD if they received one.

"It was brilliant. Really informative, answered any questions I had... It made loads of sense and he made sure I understood it before he left."

(Female, 18-24, credit customer, working full time, private renter)

Though in some cases it was evident to the research team that - based on participant recall of the experience - some participants had not been provided with the full range of available information, such as energy saving advice or a full demonstration of the IHD. As some of these respondents were satisfied overall with the installation experience, this suggested they were unaware of the breadth of advice and information they should be provided with. In a few cases, qualitative interview participants themselves described being less satisfied with the information received, and this was most commonly in relation to the explanation or demonstration of the IHD.

Satisfaction with installation was high across survey respondents, although prepay respondents were slightly less likely to be satisfied (86% compared to 90% of credit respondents). This is interesting, considering prepay respondents reported higher satisfaction with their smart meters overall (discussed below). A few of the prepay qualitative interview participants said they were less satisfied with the information and explanation received at the installation visit (for example, around how-to top-up as a smart prepay customer, or how to interpret the IHD). In a few cases these participants described the installation visit as feeling rushed, which contrasted with the experience of most other participants.

"He wanted to get out as fast as possible."

(Female, 45-59, prepay customer, working part time, social renter)

As outlined above, 90% of installations were reported to have been successful on the first attempt. Qualitative interview participants whose installation was not successful first time indicated that this was because of technical difficulties, such as connecting the smart meter or IHD to one or both energy sources within the home or issues successfully installing a meter at the existing meter location, or logistical difficulties, where the appointment was missed due to the customer or engineers becoming unavailable.

Reasons for dissatisfaction are discussed later in this chapter.

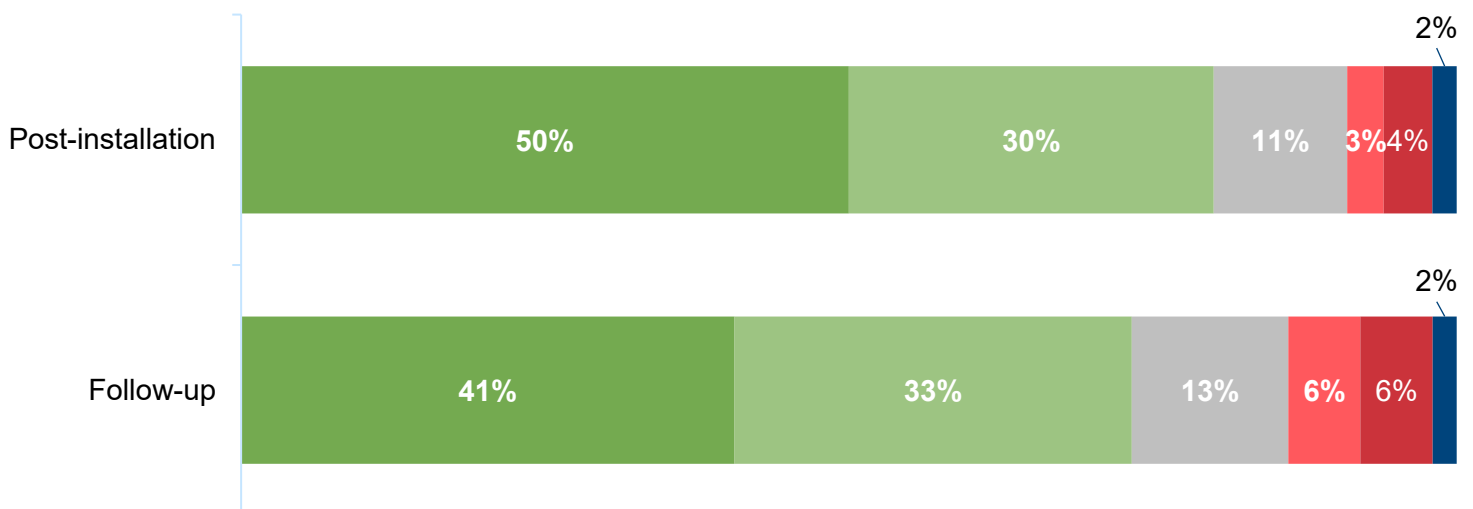
Satisfaction with follow-up contact

Survey respondents reported high satisfaction with any follow-up contact from their energy supplier, but this was notably lower than satisfaction with the installation and information and advice provided at that time. Excluding those who said this question was not applicable to them (44%) or did not know if it was (12%), three in four (75%) were satisfied with the follow-up contact they received.

Overall levels of satisfaction with smart meters

Four in five (80%) Post-installation survey respondents said they were satisfied with their smart meter, with half (50%) saying they were very satisfied. Nearly a year later, these satisfaction levels were largely sustained. Three-quarters (74%) of Follow-up survey respondents said they were satisfied, with 41% saying they were very satisfied.

Figure 7: Overall how satisfied or dissatisfied are you with your smart meter, including the in-home display/smart energy display?

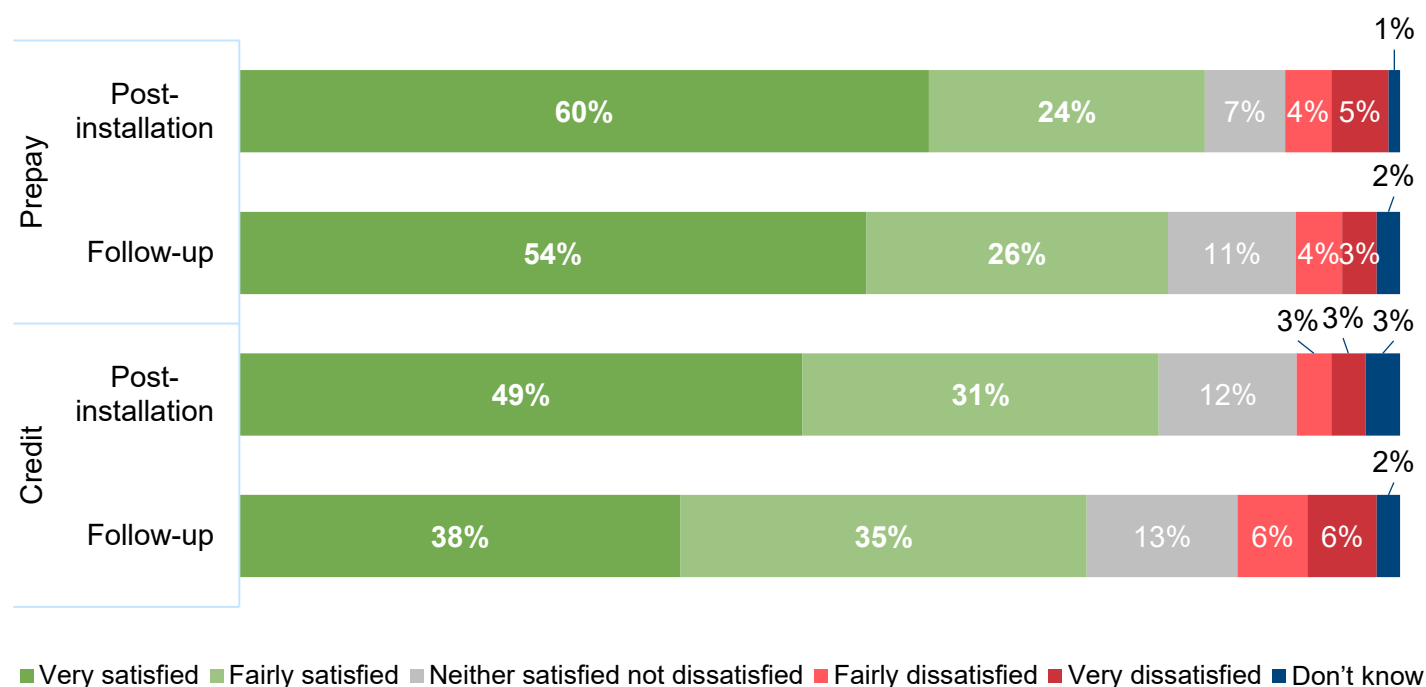


■ Very satisfied ■ Fairly satisfied ■ Neither satisfied not dissatisfied ■ Fairly dissatisfied ■ Very dissatisfied ■ Don't know

Bases: all Post-installation survey respondents - 2,015, all Follow-up survey respondents – 825

As shown in Figure 8 below, prepay respondents were among the most likely to be satisfied in both phases of the research. Satisfaction levels were not found to differ across demographic groups (aside from those overlapping with the profile of prepay customers), but there were differences depending on factors in the customer journey.

Figure 8: Overall how satisfied or dissatisfied are you with your smart meter, including the in-home display/smart energy display? (Prepay vs. Credit)



Bases:

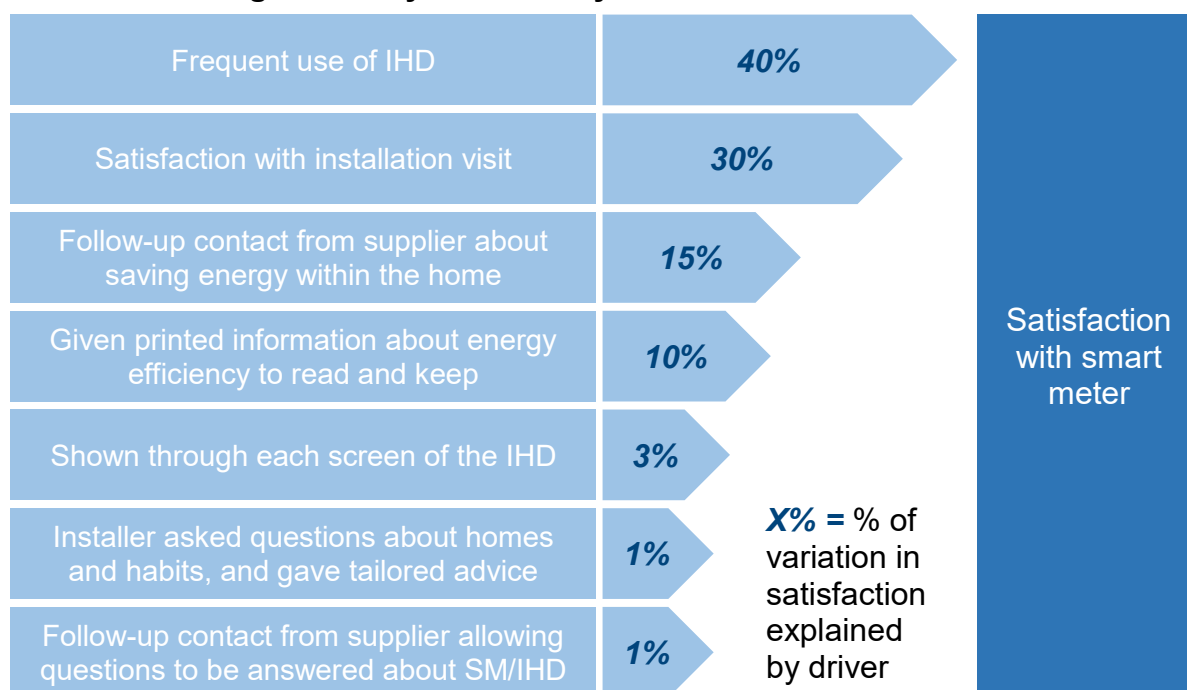
all Post-installation survey respondents - 2,015, PP respondents - 469, Credit respondents - 1,546

all Follow-up survey respondents – 825, PP respondents – 145, Credit respondents – 680

Key Drivers Analysis was used to explore the factors (amongst those for which data was gathered by the survey) most strongly associated with the high levels of overall satisfaction recorded. As shown in Figure 9 below, Key Drivers Analysis found that frequent use of the IHD and satisfaction with the installation visit, were found to have the strongest association with overall satisfaction (amongst the explanatory drivers tested)⁷. The analysis also found that recalling provision of energy saving advice, either through follow-up contact from the supplier or during the installation of the smart meter, was related to satisfaction levels.

⁷ In addition to the seven drivers shown in Figure 9, other potential drivers were tested for association with the outcome (satisfaction with smart meter). These were the respondent having requested the installation themselves and the respondent having received follow up advice about installing energy efficiency measures, or schemes to help with financing such measures. These additional variables were tested but were not included in the model either due to weak association with the outcome, or multicollinearity with potential drivers that were included.

Figure 9: Key driver analysis of overall satisfaction



Base: all Follow-up survey respondents - 825

The findings of this analysis were corroborated by the qualitative interviews, where participants often referred to their satisfaction with the installation visit, and the installer's conduct (for example, being professional and friendly), when they were discussing their overall satisfaction with their smart meter experience. Visualisation of their consumption through the IHD was also a key reason for satisfaction among the customers engaged in this study, as the next chapter will discuss.

Reasons for satisfaction among smart meter customers

Qualitative interview participants tended to attribute their satisfaction to two main benefits of having a smart meter:

- **The convenience it brought to them** – by removing the need to submit meter readings or, for those on smart prepayment, that it provided easier and more flexible ways of topping up.
- **The ability to see and track their energy consumption and spend** – which was felt to provide reassurance that they were being billed accurately, as well as inform them about their energy consumption and what drives it.

The reasons for being satisfied with having a smart meter matched closely with reasons given by the survey respondents about what motivated them to have a smart meter installed. A third of respondents (33%) said they had a smart meter installed so that they would be able to see how much energy they were using and a similar proportion (30%)

said it was so they no longer needed to provide meter readings, suggesting that in many cases expectations were met.

Reasons for satisfaction among credit participants

Satisfaction was most commonly described by credit qualitative interview participants in terms of the smart meter-enabled consumption feedback they were being provided, either through their IHD or, in a smaller number of cases, through an app or an online account. These participants mentioned the convenience of not having to submit meter readings as part of why their reasons for being satisfied, but this seemed to be less important than the consumption feedback.

Reasons for satisfaction among prepay customers

In contrast, prepay qualitative interview participants were highly enthusiastic about the convenience benefits of smart prepay. This was largely driven by them finding topping up much easier and more convenient, with many now topping up via a mobile application (the use of apps, including for top-up, is discussed in more detail in Chapter 6). Increased ease of topping up was also described by those who continued to do so at a local shop.

This was strongly corroborated by the Follow-up survey, in which nearly nine in ten prepay survey respondents (88%) said topping up had become easier, and 86% said it had become *a lot* easier. 57% of all prepay Follow-up survey respondents said the app was what they used most often to top-up, followed by topping up at a shop/PayPoint outlet (26%) and online (13%). See Chapter 6 on the use of other smart-meter enabled devices for more detail about experiences of smart top-up.

“I love the fact that I can literally be in London and top-up my central heating.”
(Female, 25-34, prepay customer, working full time, private renter)

Prepay qualitative interview participants also often said they felt reassured and more in control because of having information about how much they were spending on energy throughout the day.

Some also linked having a smart meter (and an associated IHD or app) with less frequently requiring emergency credit and cited this as a key reason for their satisfaction. The smart meter (and IHD or app) made it easier for them to keep track of their credit balance (helping them to avoid unintentionally letting it run too low), provided them with low credit alerts and gave them more flexible top-up options to keep their meter in balance. These top-up options included the use of an app, online account or over the phone, which could all be used from at home or outside of the home when they didn't have their key or key card, which they would have needed in the past.

Case study: Highly satisfied prepay customer, using IHD to feel more in control

Jean (46) is unemployed and lives in social housing with her grown-up daughter, Anita. Jean and Anita share the responsibility for energy costs in their house and they have both tried, together, to make changes to their household and their behaviour to reduce their bills.

Jean and Anita are highly satisfied with having a smart meter because it helps them feel much more in control of their credit balance.

They have been able to top-up “in time” much more often since having a smart meter as it is much easier to see how balance they have left. They frequently look at the IHD to check their credit balance and to watch out for low credit alerts. As a result, they have not gone into emergency credit as often as they had in the past.

Jean and Anita also use their IHD to help them keep track of their spending, budget and think about changes they could make to consume less energy.

Anita feels “closer to reality” as she can see their energy consumption in pounds and pence. Anita said the IHD has “brought a little bit more joy because we are not having to worry about the electric or gas going down a lot quicker than before”.

Reasons for lower and decreased levels of satisfaction

Just 7% of Post-installation survey respondents reported they were dissatisfied with their smart meter. This rose slightly to 11% when surveyed almost a year later. Analysis of individual responses found that nine in ten (89%) respondents reported the same level of satisfaction in the follow-up phase. One in ten (11%) reported a fall in their satisfaction level.⁸

The most common reason given by these respondents for a fall in their level of satisfaction over time was technical difficulties. 26% of those who reported a lower level of satisfaction said they had experienced technical issues with their IHD, and 24% reported their meter was not working as expected. Issues highlighted by qualitative interviews included gas data not displaying properly (which could have been due to this data not meeting customer expectations, as gas data is updated every 30 minutes unlike electricity data, or a genuine issue with the smart meter or IHD), or a discrepancy between the total spend amount shown on their IHD when compared against their statement or online account.

⁸ Based on a 2-point fall in satisfaction within a 5-point scale of: very satisfied, fairly satisfied, neither satisfied nor dissatisfied, fairly dissatisfied, and very dissatisfied.

A few participants noted issues with the accuracy of their consumption feedback as the seasons changed; a few prepay participants reported that the 'estimated days until top-up' was inaccurate heading into winter (which likely reflects the way this is calculated by the smart meter or IHD).

In some cases, the IHD did not match expectations in terms of its look and feel or the granularity of information it provided. One participant compared the IHD they had received with the IHD they had seen in advertising and felt the display type featured in TV adverts had a more attractive and engaging presentation of information. A few also felt the IHD showed them less granular information than they had expected, with some expecting appliance level energy consumption information. In a couple of cases, participants were also expecting to be able to view their energy consumption data from before their smart meter installation for easy year-on-year comparison. Chapter 5 discusses engagement with the IHD in more detail.

When asked if they had any concerns about smart meters in the Post-installation survey, the most common concerns were that it would be expensive to the individual (3%), the smart meter wouldn't provide accurate readings (2%), and that the smart meter might not be compatible with other suppliers (2%). These initial concerns held true for a few Follow-up survey and qualitative interview participants, who reported nearly a year later that they had been dissatisfied to find out that they may be unable to maintain 'smart' capabilities if they switch energy supplier (implying they were not aware of this issue with first generation smart meters beforehand).

"I didn't know until afterwards that your equipment changes, depending which energy supplier you have. Which was really, really annoying. The idea that if I do change my energy supplier, I have to have it taken out and then another one put it is really annoying.⁹ And to be honest, if I had known that before it was installed, I don't think I probably would have installed it".

(Female, 25-34, credit customer, working full time, owner-occupier)

Nearly a year later, follow-up survey respondents were again asked whether they had any concerns.¹⁰ The list of the most prominent concerns below shows a significant increase in the number concerned about losing 'smart' capabilities compared to earlier in the year. This may reflect increased media coverage of this issue throughout 2017:

- Should they want to switch supplier, they may lose 'smart' capabilities (9%)

⁹ It should be noted that it is a common misconception that the first generation of smart meters must be replaced to maintain smart services after switching supplier. The Data and Communications Company (DCC) is developing a solution that will remotely move first generation smart meters into the national communications infrastructure to enable consumers to retain their smart services upon switching.

¹⁰ This was an open-question inviting a spontaneous response (meaning that respondents could answer in any way they choose and were not limited to set responses).

- Inaccurate readings provided by the smart meter (4%)
- The smart meter was not installed properly or was not working correctly (4%)
- The smart meter was difficult to use or understand (4%)
- The cost of having the smart meter has added to their bill (4%)
- The smart meter was viewed as an invasion of privacy or the supplier would know exactly what they were doing (3%)
- Paying too much attention to the display or checking it too much (3%)

Follow-up survey respondents who reported having a concern were less likely to say they were satisfied with their smart meter than those that said they didn't have any concerns (61% satisfied, compared to 81% of those who did not report a concern). Fewer prepay respondents had a concern about their smart meter (21%, compared with 36% of credit customers), perhaps reflecting the higher levels of overall satisfaction amongst this group. Those from households with lower incomes were also less likely to express a concern (30% of those from households with a total annual income of £30,000 or less had a concern, compared with 42% from households with annual incomes above £30,000).

Levels of advocacy among smart meter customers

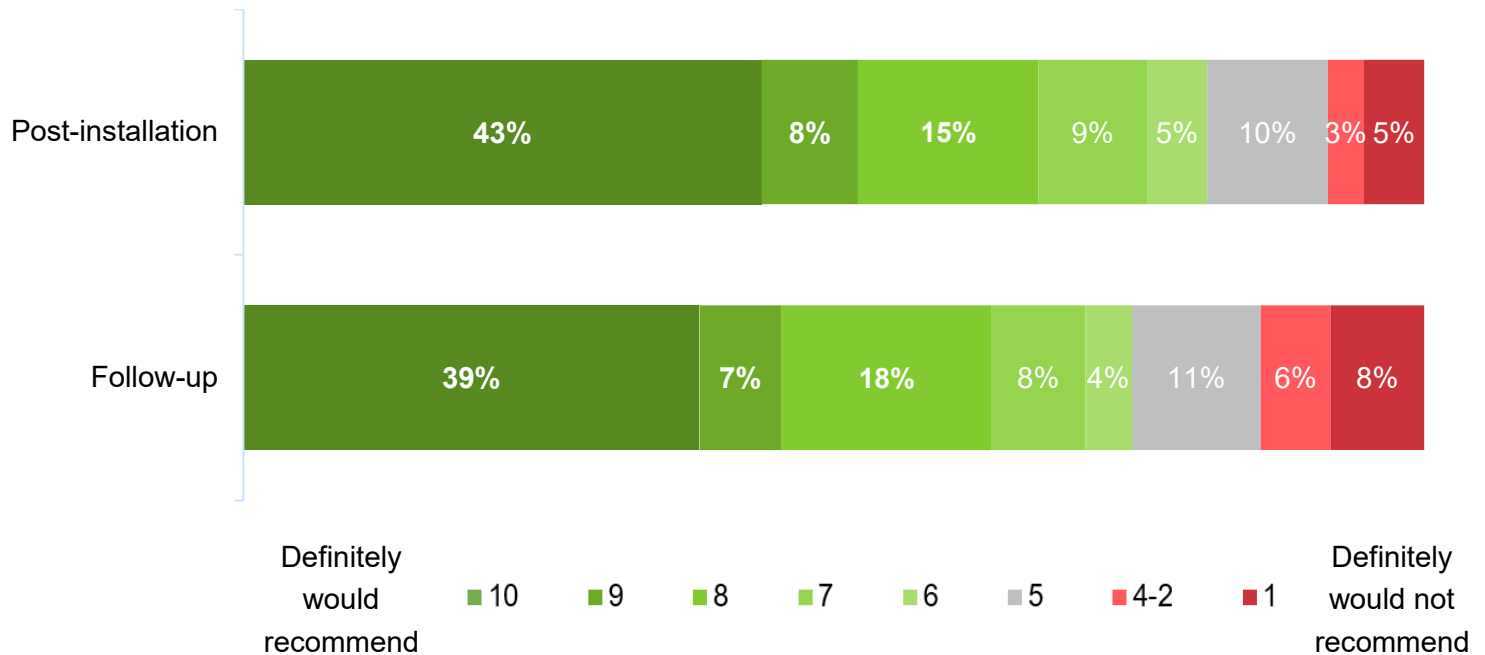
When asked just after installation how likely they were to recommend a smart meter to a friend, colleague or relative on a scale of 1 (definitely would not recommend) to 10 (definitely would recommend), eight in ten (80%) gave a score of 6 or more.¹¹

This compares favourably with similar measures of consumer advocacy in the energy industry. For example, five in ten energy bill payers (53%) gave a score of 6 or more for how likely they would be to recommend their energy supplier in a survey for Energy UK.¹²

¹¹ A score of 6 or above represents a positive answer, in that the respondent gave a score higher than the midpoint of 5 which represents a neutral response.

¹² Ipsos MORI (on behalf of Energy UK), ['Consumer Experiences of the Energy Market – Wave 4'](#), 2015.

Figure 10: How likely would you be to recommend a Smart Meter to a friend, colleague or relative?

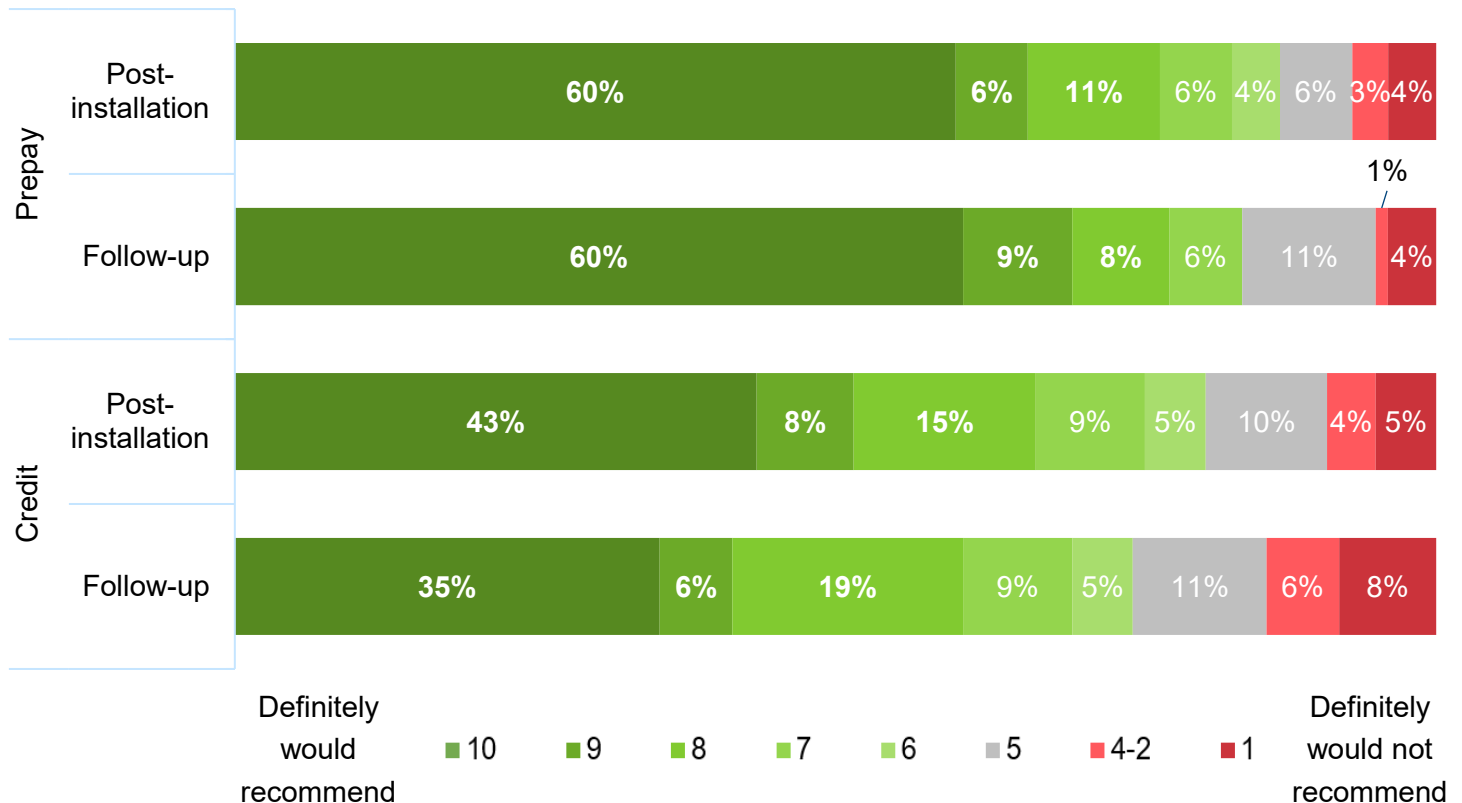


Base: all Post-installation survey respondents – 2015, all Follow-up survey respondents - 825

When asked again a year later, three-quarters (76%) again gave a score of 6 or above. This suggests that, like satisfaction levels, advocacy levels were sustained over time. Analysis of respondent-level change found similar results to that for satisfaction: most reported similar advocacy levels, with only a small number reporting a drop.

While levels of advocacy were high across all respondents, prepaid customers were especially more likely to say they would recommend a smart meter; 83% gave a score of 6 or above, compared to 74% of credit respondents. They were also nearly twice as likely to give the maximum score of 10 out of 10 for likelihood to recommend. 60% of prepaid respondents gave a score of 10, compared to 35% of credit respondents.

Figure 11: How likely would you be to recommend a Smart Meter to a friend, colleague or relative? (Prepay vs. Credit)



Bases:

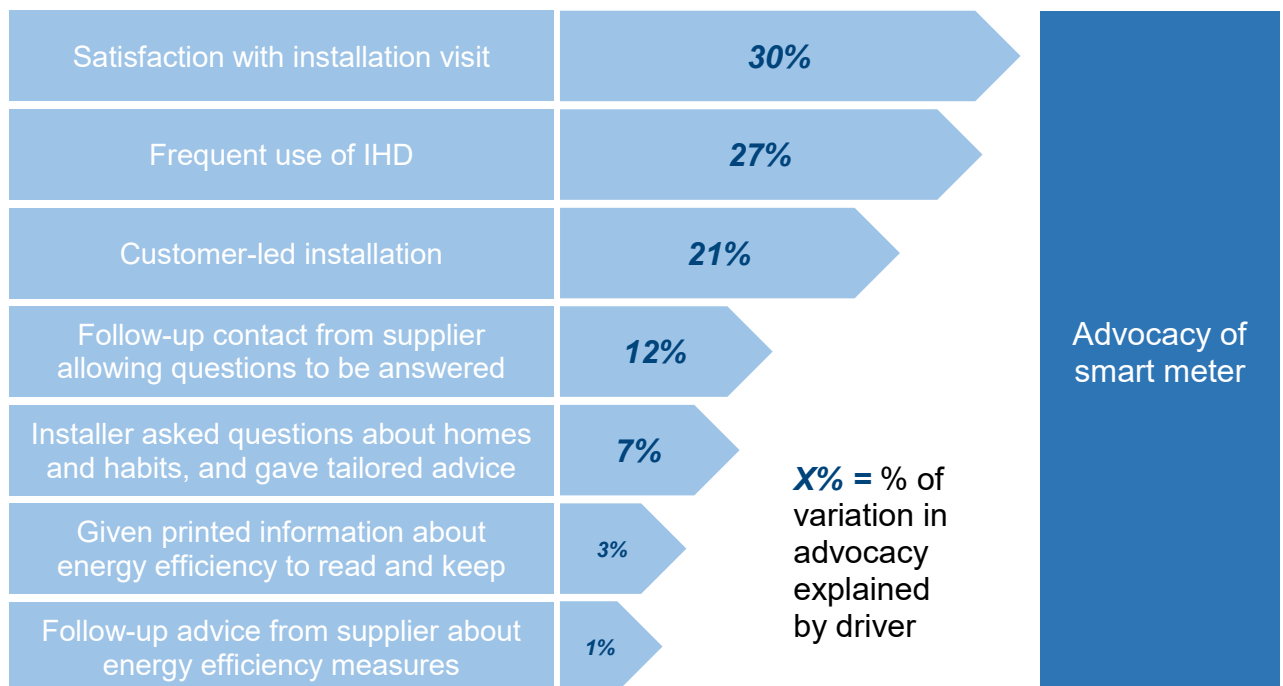
all Post-installation survey respondents - 2,015, Prepay respondents - 469, Credit respondents - 1,546

all Follow-up survey respondents – 825, Prepay respondents – 145, Credit respondents – 680

As shown in Figure 12 below, Key Drivers Analysis found that satisfaction with the installation visit, and frequent use of the IHD, were the drivers most strongly associated (among explanatory drivers tested¹³) with advocacy for smart meters. The respondent having initiated the process of having a smart meter installed themselves was also highly associated with subsequently being an advocate of smart metering to others.

¹³ In addition to the seven drivers shown in Figure 12, other potential drivers were tested for association with the outcome (smart meter advocacy – defined as score of 9 or above). These were having received follow up contact with information about how to save energy, and information about schemes that can help finance energy efficiency measures. These additional variables were not included in the model either due to weak association with the outcome, or multicollinearity with other explanatory drivers that were included.

Figure 12: Key driver analysis of smart meter advocacy



Base: all Follow-up survey respondents - 825

Some qualitative interview participants said they had already spoken to their friends, family, neighbours and colleagues about their smart meter. The messages being shared were positive, with some trying to spread the word among their local community about the advantages of smart metering, particularly in relation to the improved ease of topping up.

"It's something that I've raved about. Whenever I hear people that don't have a smart meter, I always end up getting my app out."

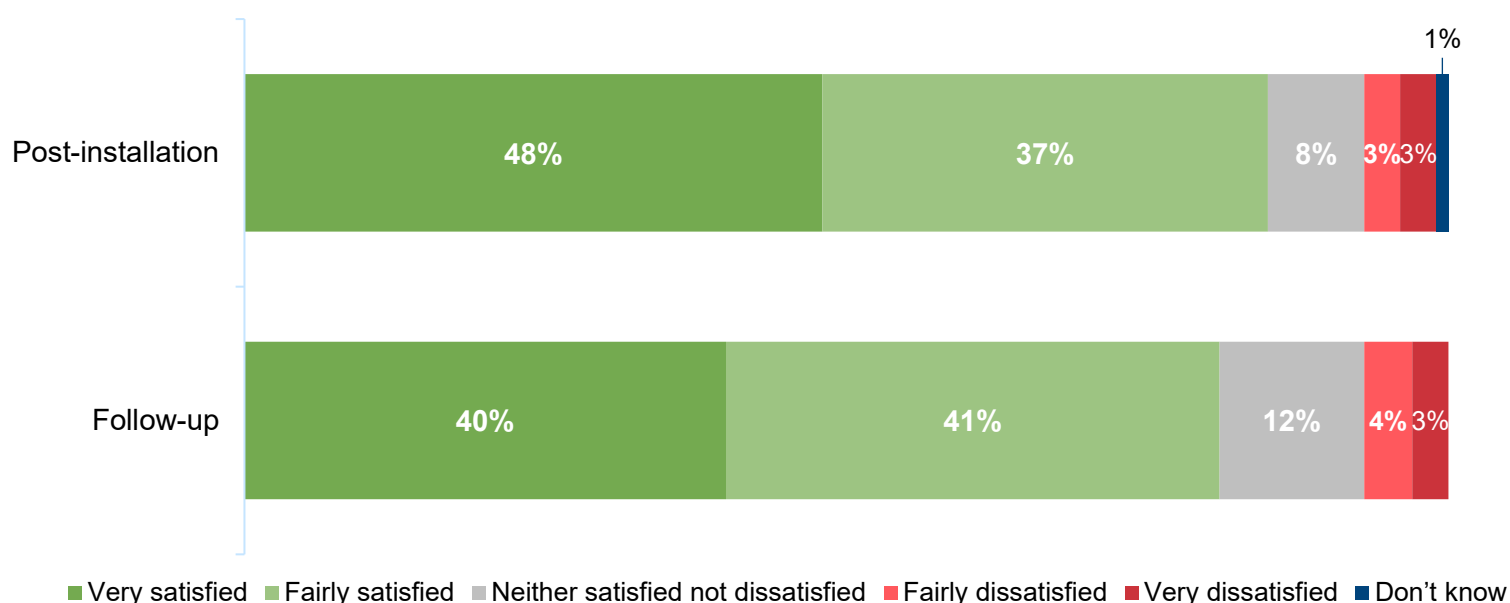
(Female, 25-34, prepaid customer, working full time, private renter)

Levels of satisfaction with energy suppliers

Respondents were asked to rate their level of satisfaction with their energy supplier. 85% of Post-installation survey respondents said they were satisfied with their energy supplier. Nearly a year later, this had decreased slightly to 81%. Again, only small number of respondents said they were dissatisfied with their energy supplier, and this was consistent across both surveys (6% Post-installation, 7% Follow-up).

This compares favourably with measures of supplier satisfaction amongst non-smart meter customers. Ofgem's Consumer Engagement Survey 2018 found that 75% of non-smart meter customers were satisfied with their supplier (and 83% of smart meter customers were satisfied).¹⁴

Figure 13: Overall how satisfied or dissatisfied are you with your energy supplier?



Bases: all Post-installation survey respondents - 2,015, all Follow-up survey respondents – 825

Since getting their smart meter, some qualitative interview participants felt more positive about their supplier than before. In a few instances, participants had used their smart meter data (on their IHD or on their app) to check the figures against their bill or to check their direct debit amount. This was found to be accurate and had led to feelings of increased trust and transparency. In a couple of cases, smart meter data had also enabled them to more quickly resolve bill disputes.

However, issues with consumption and spend data were linked to dissatisfaction with suppliers in some other cases. For instance, some participants said they were dissatisfied with their supplier because of the issues they had matching up their cost data their IHD, online account and/or bill (as mentioned previously). Similarly, participants that felt that the smart meter (or particularly, the IHD) did not meet their expectations (in terms of look, feel or granularity of data) and sometimes this reflected in their attitude towards their supplier.

Some also expected a greater level of engagement from their supplier with their smart meter customers, including more follow-up to find out about the experiences of these customers and the impact of the installation.

¹⁴ Ofgem, '[Consumer Engagement Survey 2018](#)', 2018.

“I think [the supplier] should have been proactive in asking those questions; is this changing your energy consumption? Did it meet your expectations? I would have thought they’d want to know that information from their customer base, just as a customer service point of view.”

(Female, 25-34, credit customer, working full time, owner-occupier)

5. Use of the in-home display

The ELP provided substantial evidence on the value of In-Home Displays (IHDs) to consumers as the core element of customer engagement with energy consumption data, describing them as ‘the first and most visible element of smart metering for the customer’.¹⁵

This chapter provides new evidence to help validate the findings of the ELP regarding the IHD by exploring the extent of IHD engagement amongst the customers who took part in this research.

Summary of in-home display use

- IHD acceptance was near universal; 92% recalled the offer of an IHD, and 95% accepted it
- Nearly a year after installation, eight in ten (80%) IHD owners still had their IHD plugged in and in use – a modest decrease from nine in ten (88%) just after installation
- There was a fairly modest decrease in the number of IHD owners who still engaged with their IHD – seven in ten (70%) still engaged with their IHD in some way, down from eight in ten (82%) just after installation
- Frequency of IHD engagement reduced over the year – the number saying they looked at their IHD at least weekly fell to 45% from 67%
- Key Drivers Analysis found that recalling receipt of printed information and tailored advice at installation were most strongly associated with frequent IHD engagement in the long-term, as well as receipt of follow-up advice on energy saving and the respondent setting a consumption baseline
- Current consumption information was viewed more than historical information - the traffic light display was one of the most used features,

¹⁵ DECC, ‘[DECC’s Policy Conclusions: Smart Metering Early Learning Project and Small-Scale Behaviour Trials](#)’, 2015, page 17.

and often mentioned by interview participants as a quick way to assess their current electricity usage

- A perceived lack of ongoing need for the information shown on the IHD was the most common reason for disengagement – although not understanding how to use the IHD, believing it not to be working or using an app were also given as reasons

Engagement with IHDs

Uptake of IHDs

Nine in ten respondents (92%) recalled being offered an in-home display (IHD), and 95% of these said they accepted the offer (meaning 88% of all respondents reported having an IHD, henceforth referred to as 'IHD owners'). The majority recalled being told about the offer of an IHD in advance of the installation visit (59%).

Nearly a year after installation, around eight in ten (80%) IHD owners said their IHD was still plugged in and in-use; a modest decrease from the nine in ten (88%) who said the same just after installation.¹⁶

Prepay respondents with IHDs were more likely to have said their IHD was still plugged in and in-use nearly a year after installation. 85% of prepay respondents reported this, compared to 79% of credit respondents.

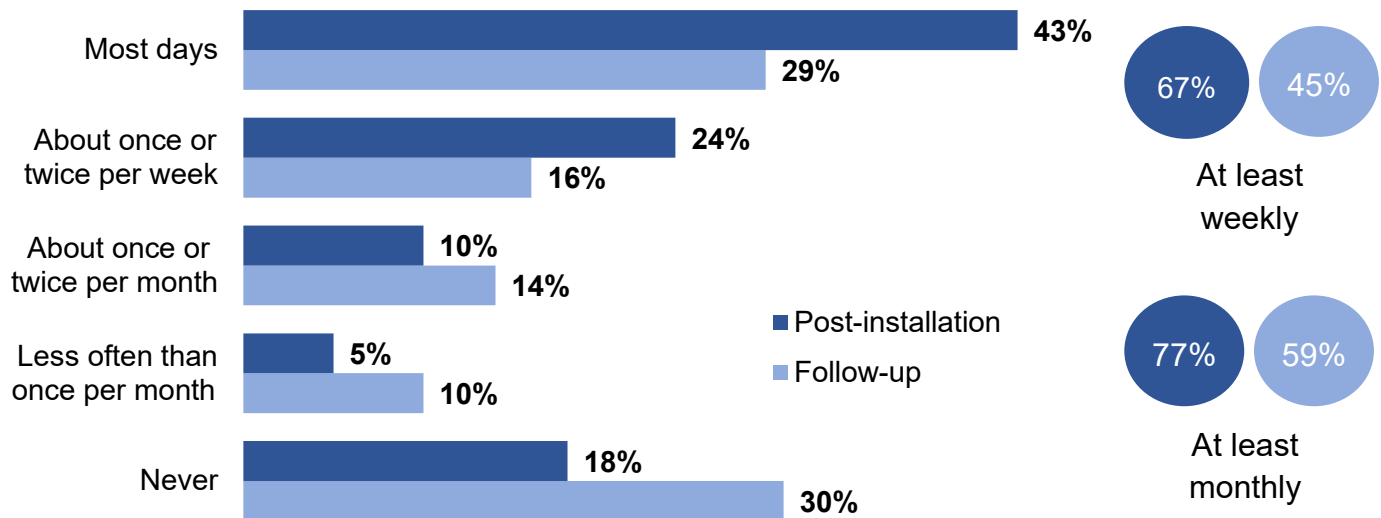
Changes in IHD interactions over time

Nearly a year after installation, just under half of IHD owners reported that they looked how much energy they were consuming at least weekly (45%), a decrease from two-thirds earlier in the year (67%). Similarly, three in ten (29%) said they looked at it most days, down from just over four in ten (43%).

Again, prepay respondents with IHDs were more likely to report frequent IHD engagement. looking at how much energy they were consuming at least weekly on their IHD (54%, compared to 44% of credit respondents).

¹⁶ 'IHD owners' refers to all survey respondents who accepted an IHD as part of their smart meter installation. All figures related to IHD engagement are based on group to present findings that represent the population who received an IHD.

Figure 14: Thinking about the last couple of months, how often, if at all, have you looked at information about how much energy you are using (either in pounds and pence or kilowatts) through your in-home display?



Base: all Post-installation survey IHD owners – 1,763, all Follow-up survey IHD owners – 755

In line with what previous research has suggested (such as the Early Learning Project), Figure 14 shows that, overall, the number who engaged with their IHD to check their energy consumption decreased over the course of the year. However, this decrease was arguably modest, with a substantial proportion of respondents continuing to engage with their IHDs. Seven in ten (70%)¹⁷ continued to engage with their IHD in some way nearly a year after their installation, down from eight in ten (82%) just after it.

Reasons for varying frequency of engagement with the IHD over time

As discussed later in this chapter, some IHD owners continued to use their display frequently over the year because, for example, it remained important to them to ensure their credit balance did not run too low or enabled them to track their consumption against a budget or baseline. However, on the whole, the frequency with which IHD owners checked their consumption had decreased by the end of the year, as shown in Figure 14. Just under half of IHD owners reported that they looked at how much energy they were consuming at least weekly (45%), a decrease of 22 percentage points from earlier in the year (67%).

Correspondingly, there was an increase of 9 percentage points in those reporting less frequent engagement (as well as an increase of 12 percentage points in the number saying they never look at their IHD to check their consumption). This is in line with findings from the Early Learning Project's qualitative research, which found that IHD users tended

¹⁷ This remaining 30% includes the 20% who said their IHD was unplugged and 10% of IHD owners who said they do not look at how much energy they are consuming on their IHD, despite it being plugged in.

to move from a more intensive ‘information-driven’ phase of engagement, in which users learn about what consumes energy in their home, to a less-intensive ‘monitoring’ phase, keeping an eye on day-to-day consumption, by, for example, monitoring the colour of the traffic lights.

This was also suggested by some qualitative interview participants, who felt there was limited long-term benefit to use of the more detailed information available on an IHD on an ongoing basis as they moved to a more ‘monitoring’ approach. For example:

Using the IHD to estimate appliance-level usage

In some cases, the IHD had been used initially as a tool to help IHD owners understand which appliances were most energy-intensive and therefore costly to run (using the traffic lights and daily cost information). However, once this initial education-role for the IHD had taken place, some saw less need to keep looking at this information.

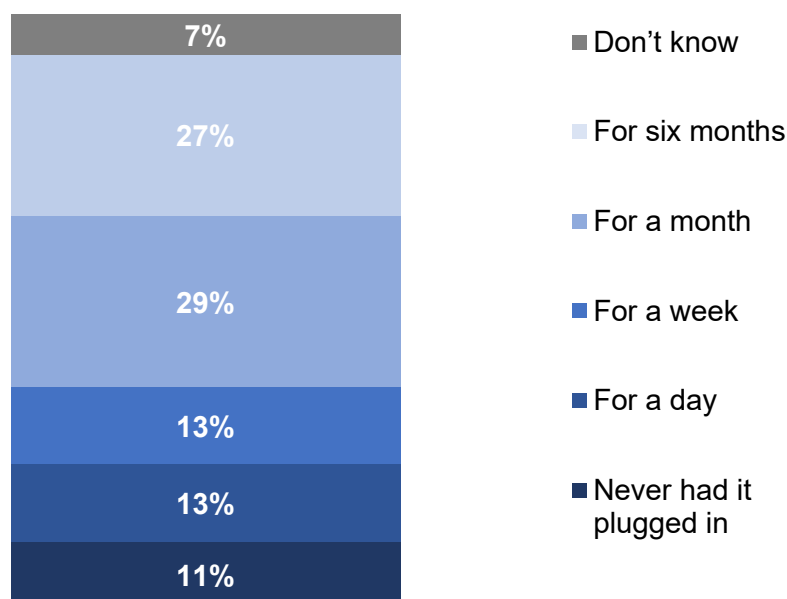
Using the IHD to provide reassurance around billing

Similarly, a few participants had initially used the IHD as a cross-checking tool against their billing information. Once reassured that the information was accurate on their bills, referring to the IHD for this purpose reduced.

Reasons for disengagement with the IHD

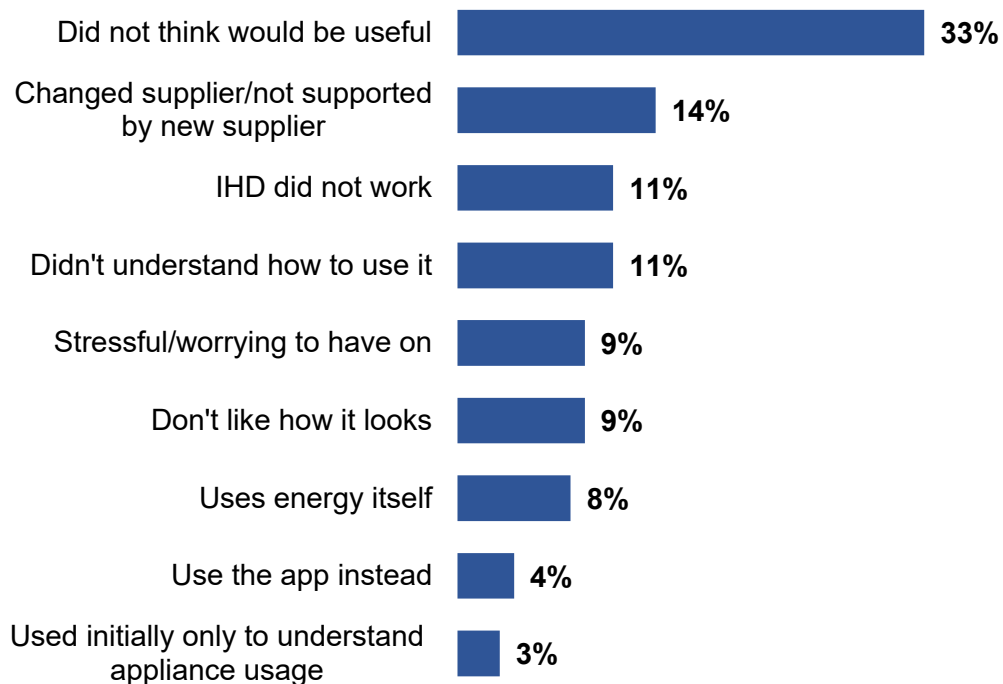
As above, nearly a year after installation, three in ten (30%) said that they never look at their consumption on their IHD. Two in ten (22%) IHD owners had unplugged their IHD, and just under one in ten (8%) said they never look at their consumption on it, despite it being plugged in. Figure 15 shows the length of time the IHD that the former said their IHD was plugged in for before they unplugged it:

Figure 15: How long did you have your in-home generally turned on and in use for before you unplugged it?



Base: all Follow-up survey IHD owners who had unplugged their device - 157

Figure 16: For what reasons is your in-home display not generally plugged in and in use? Any other reasons?



Base: all Follow-up survey IHD owners who had unplugged their device - 157

Did not think it would be useful

As shown in Figure 16 above, the most common reason given for this was that they did not think it would be useful for them (33%). This was also observed in the qualitative interviews. Some participants were not convinced of the benefit of the IHD to them personally. Reasons given were that they felt they could afford their current energy bills or were not interested in reducing their consumption, they were doing all they could to save energy, or prized comfort over cost-saving.

"It didn't mean anything to me...it got on my nerves, it told me I used 71p today, I can't be bothered with that. I took it out and put it in the cupboard. My mum chucked hers away too, don't want to see how much I'm using all day just to save a few pennies."

(Male, 45-59, prepay customer, working part time, social renter)

"When it comes to keeping ourselves warm, I'm sorry, we just have to keep ourselves warm, I can't really budget on that, I can't freeze."

(Female, 35-44, prepay customer, unemployed, private renter)

Others were dissatisfied with the amount or type of information provided by the IHD. In a few cases participants spontaneously mentioned desired improvements to the IHD that they felt may have kept them engaged with the device over a longer time period, or which would have discouraged them from unplugging it altogether. These recommendations

included showing appliance-level usage, which some participants felt would make the information more actionable, salient or timely (for example, seeing more clearly the immediate impact of turning an electric heater off).

“How can I reduce it if you don’t tell me where the money is going?”

(Male, 32, prepay customer, working part time, social renter, uses IHD and app)

Changed supplier/ not supported by new supplier

One in seven (14%) of those who had unplugged their IHD said this was because they had switched supplier and their new supplier was unable to operate the IHD. Unfortunately, responses in the qualitative interviews did not elaborate on this reason for disengaging with the IHD and it is therefore difficult to draw more detailed conclusions about it. At a minimum, though the survey findings suggest that switching had an impact on IHD engagement for some respondents. It should be noted though that IHDs should, for the most part, retain their functionality when consumers switch supplier.¹⁸

IHD did not work/stopped working

One in ten (11%) of those who had unplugged their IHD said this was because the IHD did not work. This equates to 3% of all IHD owners in this study. Evidence from the qualitative interviews suggested that the distinction between not understanding how the IHD works and it (technically) not working was not always clear. In some cases where interview participants said they struggled to get the IHD ‘working’, it was not due to a technical fault, but rather not understanding how to use it.

“There are lots of numbers, kwh, I just don’t get it.”

(Female, 25-34, prepay customer, student, owner-occupier, uses app but not IHD)

Did not understand how to use it

11% of those who had unplugged their IHD said this was because they did not understand how to use it. The qualitative interviews found that some participants felt the installation did not leave them sufficiently equipped to use the device. In some cases, participants reported feeling that the installation visit had been rushed, or that they had not been given as much information as they needed to support them in using the IHD effectively.

“They didn’t explain it very well...What’s the point in having it if it’s just all mumbo jumbo?”

(Female, 60-64, credit customer, working full time, social renter)

¹⁸ When consumers with first generation smart meters switch supplier, the new supplier may temporarily be unable to operate the meter in ‘smart’ mode. The IHD should continue to accurately display energy consumption information but cost information (e.g. details of current consumption in pounds and pence) may not be accurate because the smart meter will not be updated with the new tariff data, and so the IHD cannot use this to update cost information. Full ‘smart’ capabilities will be restored for these customers when their first generation meter is enrolled into the national communications infrastructure, or if they switch to a supplier who can operate their smart meter in ‘smart’ mode.

A few participants described the information materials that were left with them as too complicated and felt they would have valued more time to discuss the IHD with the installer, or through a follow-up call or visit once they had time to become more familiar with the device themselves.

“The display I find unsatisfactory because I’ve never been able to find out quite exactly what some of the things are.”

(Male, 75 and over, credit customer, retired, owner-occupier)

“I wanted someone to come and sit down and talk it through.”

(Female, 45-59, prepay customer, unemployed, social renter)

Stressful/worrying having it on

Stress induced by the information shown on the IHD was also mentioned as a reason for unplugging the device (9% of those who had unplugged it), and there were some isolated examples from prepay participants of the IHD causing, or potentially causing, anxiety.

“I checked it 5 times a day- not very helpful as it made me think I daren’t have another brew.”

(Female, 60-64, prepay customer, unemployed, private renter, uses IHD not the app)

Don’t like how it looks

A few interviews participants suggested a more visually appealing device may have encouraged them to keep it in use for longer. These participants suggested a ‘sleeker design’ or something that could be wall-mounted (to avoid cluttering work surfaces). There were also mentions in the qualitative interviews of the design of the IHD not meeting expectations based on adverts for IHDs they had seen on TV, or other types of display that had been seen in other households.

“If it looked a bit more exciting. I’ve seen the one on TV and I thought ‘oh that’s nothing like mine. Mine’s a bit smaller.’”

(Female, 45-59, prepay customer, working part time, owner-occupier)

Other reasons

8% said they had unplugged their IHD because it uses energy itself, and somewhat like the reasons for less frequent engagement over time, 3% said they had only used it initially to understand the consumption of appliances in their home. 4% said that they used a smart phone application (apps) instead of their IHD. The use of other smart meter-enabled products and services, like smart phone apps, is discussed further in Chapter 6.

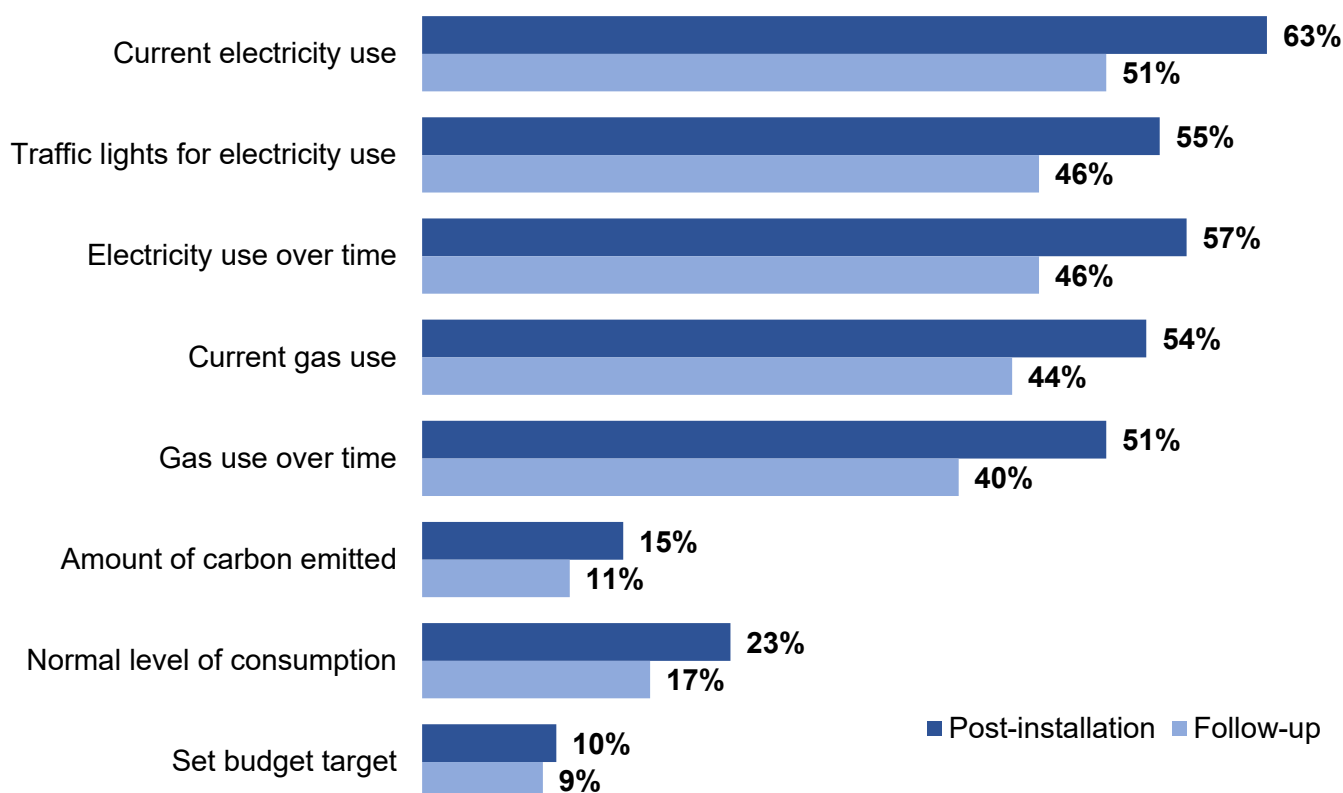
Engagement with different IHD features

Overall, IHD owners were more likely to report that they were using their IHD to look at their current usage information, such as using the traffic light feature, rather than to check their historical usage. They were also more likely to check their electricity consumption over gas consumption. Features less easily accessed via the home screen (such as past usage) were less used and often were not understood.

As shown in Figure 17, half (51%) of IHD owners in the Follow-up survey had looked at the information screen showing their current electricity use in the preceding months, and 46% had looked at the traffic light display that showed whether they were using a high, medium or low amount of electricity at that point in time.

A similar proportion had looked at their electricity use over time (for example, looking at a previous week or month's usage data). Slightly fewer IHD owners had looked at either current or past information on their gas use (44% and 40% respectively). Only a small minority (11%) of IHD owners had looked at information on the amount of carbon emitted. As with frequency of checking energy use or credit balance, these proportions had fallen since the post-installation period.

Figure 17: Within the last couple of months, have you looked at each of the following features on your in-home display, or not?



Base: all Post-installation survey IHD owners – 1,763, all Follow-up survey IHD owners – 755

Many qualitative interview participants had positioned their IHD in a highly visible location (such as on a kitchen surface), and the most frequent way they were engaging with their energy consumption information was through looking the traffic light display.¹⁹ Participants particularly noticed when this display was showing a red light.

“I find it very, very useful, because you can see every day how much you use; the light changes colour; one day you use a lot more, the light is blue now but then it can come onto red. You know what you are using more because it comes to red.”

(Male, 75 and over, credit customer, retired, private renter, uses IHD not app)

Among interview participants who looked at information beyond the traffic light display, most reviewed their current (or past) energy consumption in terms of their energy spend (in pounds and pence), rather than their kWh consumption.

“I will look at costs mainly because I see no point in looking at the kilowatt hours.”

(Male, 75 and over, credit customer, retired, owner-occupier)

¹⁹ The qualitative interviews also suggested that those reporting in the survey that they looked at their ‘current’ electricity use were generally doing so using the traffic lights

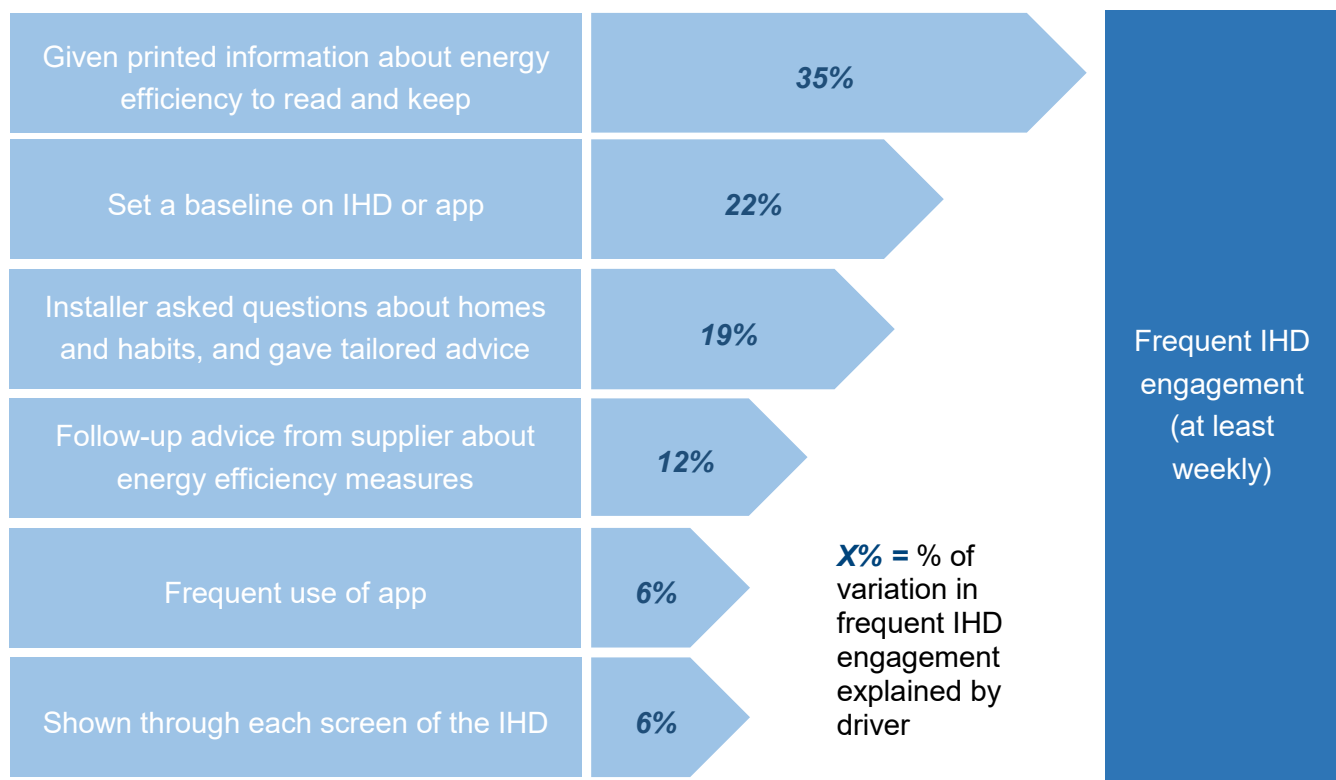
The interviews also found that few had looked at features on the IHD beyond the 'home' screen of the device which provided their 'current' consumption level (other screens included their past gas consumption and the household budget screen).

Prepay survey respondents were also asked about their use of an IHD to look at information related to their credit balance (a prepay-only feature). Just over half (52%) said that in the couple of months before the Follow-up survey, they had used their IHD to check their remaining credit balance and more than a third (36%) had used it to check for low credit alerts. A quarter (26%) had used their IHD to get information on their debt balance.

Differences in IHD engagement by customer

The most likely to report looking at how much energy they were consuming at least weekly included social renters (55%, compared to 43% among owner occupiers) and those with a total household income of less than £16,000 a year (53%, compared to 40% among those in households with an income upwards of £50,000). Perhaps unsurprisingly, the qualitative interviews suggested that more cost-conscious households used the IHD to keep an eye on how much they were spending on energy.

Figure 18: Key driver analysis of frequent IHD engagement



Base: all Follow-up survey IHD owners - 755

Differences in IHD engagement depending on customer journey

Key Drivers Analysis explored the association between various aspects of the customer journey and frequent IHD use. As shown in Figure 18 above, this analysis found that being given printed information about energy efficiency at installation or through follow-up contact, and being asked questions about your home and habits in order to receive tailored verbal advice from the installer, were all factors associated with subsequent frequent use of the IHD (among potential drivers tested).²⁰ In addition, receiving a demonstration of each screen of the IHD at the install, or having used the IHD (or app) to set a household baseline were also associated with being a frequent IHD user.

Furthermore, those whose frequency of IHD engagement had decreased over the year were less likely to have received printed energy saving advice (43%, compared with 51% overall) or general advice (54% compared with 63% overall), suggesting there may be a relationship between receiving these and sustained IHD engagement.

The qualitative interview findings corroborated this link between advice and IHD engagement. Where interview participants had received a thorough demonstration of the IHD, they tended to have a better understanding of what the IHD could be used for and to be still engaging actively with the IHD.

“He went through literally everything with me. He showed me how to set a target, showed me about the red light and why it would come on, showed me about the dual screens, and how I could set up the display as a circle, or graph.”
(Female, 18-24, credit customer, working full time, private renter)

The interviews also found that those who were dissatisfied with the advice and information received during the installation – for example, those who thought it was rushed or insufficiently detailed - were sometimes deterred from using the IHD because they felt the installation did not leave them sufficiently equipped to use it.

Additionally, a few participants described the information materials that were left with them as too complicated and felt they would have valued more time to discuss the IHD with the installer, or through a follow-up call or visit once they had time to become more familiar with the device themselves. These participants themselves linked these experiences to

²⁰ In addition to the six drivers shown in Figure 15, other potential drivers were tested for association with the outcome (frequent IHD engagement – defined as engaging at least weekly). These were the respondent having requested their installation, the respondent using various IHD features and having received a demonstration of how to set a budget. These additional variables were not included in the model either due to weak association with the outcome, or multicollinearity with other explanatory drivers that were included.

feeling that they had a limited understanding of how the IHD could be used and thought they would have used it more if they had received more guidance.

"It would have been better if he'd spent more time on it - I would have used it more."

(Female, 60-64, prepay customer, unemployed, private renter)

Case study: Engaging with an IHD

Bill (49) and Sarah (46) have lived for 20 years in their house, and now live there alone for most of the year as their children are away at university.

Bill looks after all the bills for the household and keeps a close eye on what they are spending. Bill has **switched energy supplier multiple times** in the last five years – he's shopping around for the best deal (they are credit customers).

Bill **looks through the information screens on their IHD in detail every week**. He **compares week-on-week and month-on-month usage** to get a sense of whether their level of usage has been "as it should be".

Bill had also checked **daily consumption before and after they had a new more efficient gas boiler fitted** – it showed him a reduction in gas use and **reassured him it was working properly**.

Bill also looks at information on the IHD to **check the bills they receive from their supplier** – so far, he has found all his bills to be accurate and feeling more trusting that he is being charged accurately. Bill feels comfortable paying their bills based on their current level of usage. He doesn't tend to do anything differently around the home after seeing the information on the IHD, but instead just **feels a bit more aware and in control** of what's being used.

"It alerts you to things you're using, but if you can rationalise it to know why, then you feel fine and you don't need to change anything."

Sarah is not as interested in the more detailed information on the IHD. She tends to just glance at the IHD when passing it on the kitchen surface (though really, she'd rather it could be out of the way rather than cluttering up her kitchen).

Sarah tends to notice it most when the **lights on the front of the display** change colour, although the **running daily total cost** does catch her eye too, as that's prominent on the middle of the screen.

Sarah feels that the IHD has shown her that they don't use as much as energy as she previously thought. She's been reassured by this to some extent but has also found herself going around the home **turning lights off more often**, and she has even

Case study: Engaging with an IHD

started to do this when visiting the homes of family and friends.

Bill has also downloaded the app provided by his supplier. He looks at this occasionally for a summary of their consumption and spend information (Sarah isn't interested in this at all) and logs-in in case there are attractive offers from his supplier being advertised there. Bill finds it convenient to do this from the comfort of his armchair, but still refers to his IHD much more frequently, as it provides a better display of his real-time usage.

6. Use of other smart meter-enabled devices

This chapter explores customer use of other smart meter-enabled devices, such as smart phone apps and online accounts.

Summary of use of other energy consumption feedback devices

- A quarter of survey respondents (26%) said they had downloaded an app offered by their energy supplier – this was far more prevalent among prepay respondents (70%) than credit respondents (19%)
- The primary use of apps was by prepay respondents to top-up – of those with an app, eight in ten (83%) said it was the most frequent way they topped up
- Across all prepay respondents, 57% said that they most frequently topped up via their app, 26% said they did so via a shop/PayPoint outlet and 13% said they topped up online
- Nearly nine in ten (88%) prepay respondents said that topping up had become easier since getting a smart meter – 86% said it had got a *lot* easier
- One in ten (9%) credit Follow-up survey respondents said they checked their energy consumption on their app at least weekly – but almost half (48%) of prepay respondents said they checked their energy consumption *or* credit balance at least weekly
- The qualitative research suggested that higher app engagement amongst prepay respondents was likely because they were already using their app to top-up, which made it a convenient ‘one stop-shop’ for checking credit balance and reviewing consumption
- Two in three (68%) respondents had an online account, but these were used far less frequently for consumption or credit balance monitoring and topping-up

Some respondents had accessed applications from their supplier (generally via their smart phones) which allowed them to see information about their energy account (such as their latest bill, or their current credit balance if a prepay customer) and historical information on their energy consumption. As this study was conducted with customers of two suppliers,

and covered both credit and prepay customers, it is important to note that a range of different apps, with varying functionality, may have been in use across the sample.

Importantly, the findings presented in this chapter may not reflect the experiences of smart meter customers more generally because the offers and features of smart-meter enabled apps are diverse across the sector (compared to the government-mandated IHD offer). This is important context for the study's findings on app engagement, discussed in detail below.

App ownership

Overall, just one in four customers surveyed said they have an app (26%). However, there was a substantial difference in app ownership between credit and prepay respondents. Only one in five (19%) credit respondents reported having an app, compared with seven in ten (70%) prepay respondents.

The scale of this difference indicates that app ownership was likely influenced by being a prepay customer in some way. The evidence from this research suggests this was most likely because of the different uses for apps between prepay and credit customers in the research.

Many qualitative interview participants on prepay cited the ability to top-up via an app as a key reason for getting a smart meter and benefit from doing so. Many prepay respondents reported using their app to do this. Whereas this feature is fundamental to keeping your energy supplier as a prepay customer, the features available to credit customers are arguably less important (monitoring historic consumption, account management and others), which may explain the difference. The different uses for apps are discussed in the next section.

It may also be that supplier marketing strategies and targeting of their apps explains some of this difference. Some prepay qualitative research participants noted that the benefits of the app were a key part of supplier marketing to them before their installation.

Among credit customers, those with an app tended to be more affluent (26% of those with an annual household income above £30,000, compared with 12% of those with an annual household income of less than £16,000) and were more likely to be in work (27% compared with 13% of those not working).

Among prepay customers, app ownership again varied across demographics. Those working (79%) were again more likely to have an app than those not working (59%), as were those who were more affluent (85% of those with higher household incomes, compared with 66% of those with an annual household income of less than £16,000). App ownership was also higher among prepay respondents who had initiated the installation of their smart meter (76%, compared to 55% of supplier-led installations).

The use of apps

Smart prepay: topping up via apps (and other means)

As mentioned above, the qualitative interviews found that awareness of an app and its credit monitoring and top-up features were an important motivation for some prepay participants in getting a smart meter. Subsequently, it isn't surprising that the primary use of apps by prepay respondents was for top-ups.

Three in five (60%) prepay Follow-up survey respondents said they had topped up via an app, and 46% said they had topped up online. As discussed in Chapter 4, the app was also reported to be the top-up method most commonly used by Follow-up survey respondents. Almost six in ten (57%) prepay respondents said this was the case, followed by a quarter (26%) who said they topped up at a shop/PayPoint outlet and just over one in ten (13%) who said they topped up on line.

Of prepay respondents with an app, eight in ten (83%) prepay respondents had used it to top-up and said that it was how they most frequently topped-up (79%). And the convenience this offered was a key smart meter benefit being realised by these customers - 86% said topping up had become easier since getting their smart meter and qualitative interview participants were very positive about this feature.

Monitoring energy consumption via an app

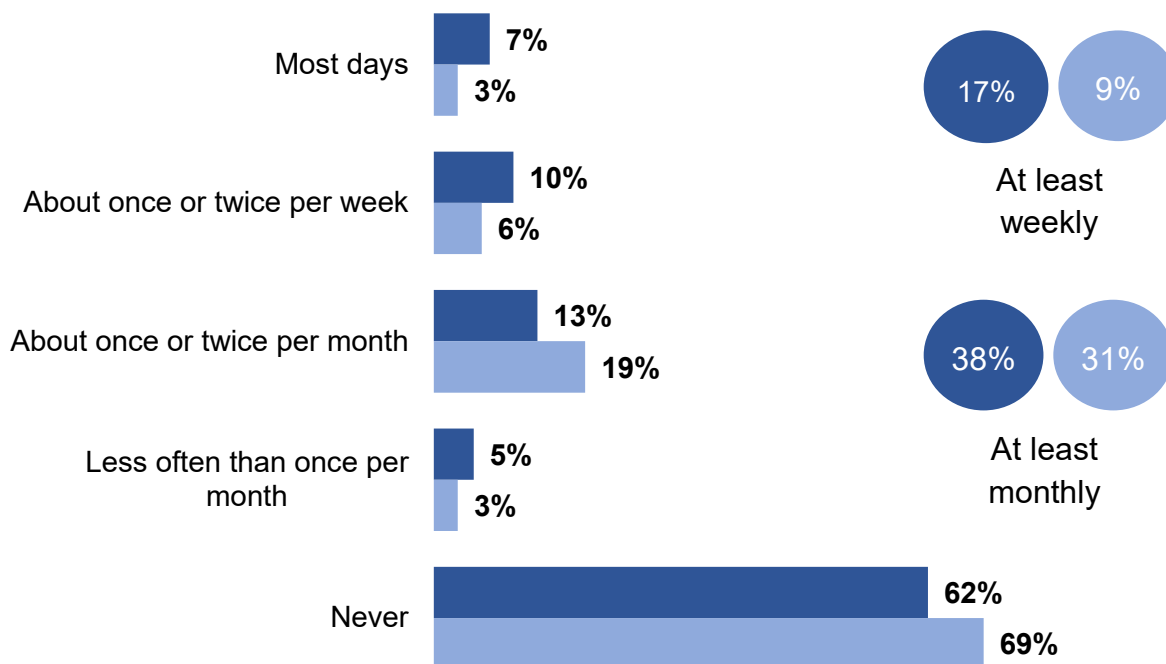
The apps available to the participants in this study had the capability to provide information on energy consumption covering up to a day before the current date. It is important to note that this differs from IHDs, which present consumption information in near real-time.

Credit customers

Follow-up survey respondents who paid by credit were asked how often they looked at energy consumption information on their app. Only a minority reported frequently doing this. Less than one in ten (9%) credit app owners said they looked at information on their app at least once per week. Seven in ten (69%) said they never did this.²¹

²¹ This includes those who said they had an app but never did this and those who said they had an app in the Post-installation survey but said they did not in the Follow-up survey.

Figure 19: Thinking about the last couple of months, how often, if at all, have you looked at information about how much energy you are using (either in pounds and pence or kilowatts) through an app from your energy supplier?



Base: all post-installation survey credit app owners - 773, all Follow-up survey credit app owners - 366

Among credit respondents with both an app and an IHD, just under one in ten (9%) checked this information on the app at least weekly, around four times less than those who looked at it on their IHD (44%). Some qualitative interview participants felt that the app was not as useful as the IHD for the purpose of monitoring consumption because it didn't provide real-time feedback.

"We were told they had no stock left of the displays...after installation I chased about the IHD, I could keep doing this but I don't know if it will achieve anything.... Without it, we don't get real time information. The app doesn't work so well, doesn't give more immediate information, like seeing the effect of switching on the oven"
(Male, 25-34, credit customer, working full time, owner-occupier)

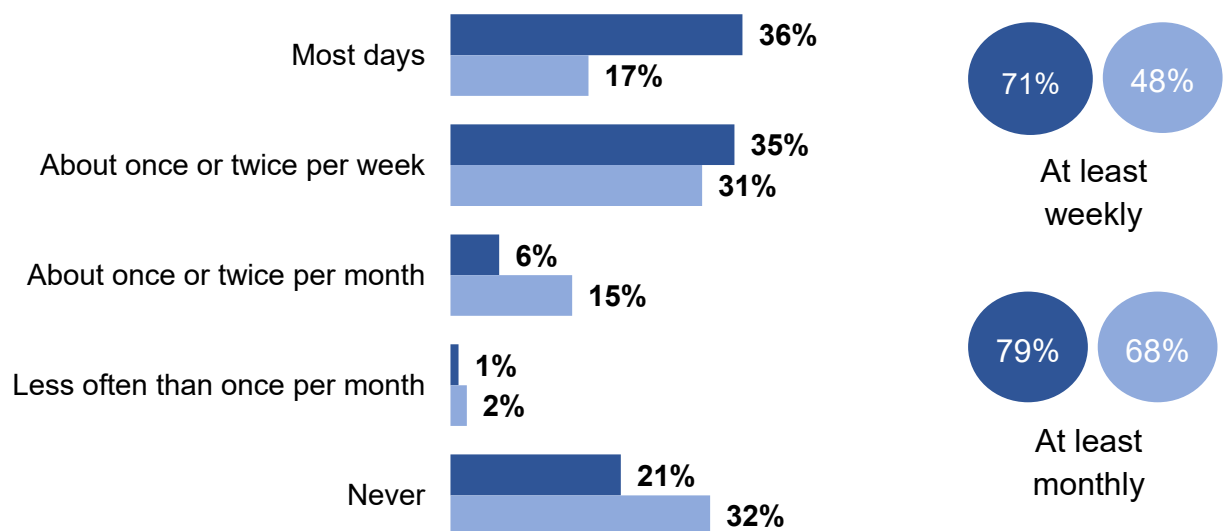
In addition to the monitoring of energy use, the qualitative interviews identified some credit customer-specific uses of the app. One participant had used it to provide annual usage data when switching supplier, and another had used it as evidence in a dispute with his supplier about usage and billing.

Prepay customers

Prepay Follow-up respondents were asked how often they looked at energy consumption information or their credit balance on their app. Interestingly, prepay customers were far

more likely to say they frequently do one of these, with almost half (48%) saying they did this at least weekly. Only three in ten (31%) said they never did this.²²

Figure 20: Thinking about the last couple of months, how often, if at all, have you looked at information about how much energy you are using or your credit balance (either in pounds and pence or kilowatts) through an app from your energy supplier?



Base:

all Post-installation survey prepay app owners - 400, all Follow-up survey prepay app owners - 123

Reasons for higher app engagement amongst prepay respondents

A possible explanation for the increased app engagement amongst prepay respondents compared to credit respondents was due to the inclusion of 'or credit balance' in the question for prepay respondents. Indeed, the qualitative interviews found that many participants were primarily checking their credit balance when they engaged with their app.

However, the qualitative interviews also highlighted that for prepay customers, checking credit balance and monitoring consumption can often be one and the same. Some used the amount of credit they had remaining and an estimation of how many days they had left before it would run out as a form of feedback about how much energy had been consuming. In effect, these participants monitored their consumption via their credit balance.

There was also evidence of prepay participants directly using the consumption information features. Interestingly though, it seemed that this use was more commonly in conjunction with or because they were already using the prepay features.

²² This includes those who said they had an app in either of the two surveys and those who said they had an app but never did this to allow for fair comparability with the findings on IHD engagement in Chapter 5.

For instance, if the balance was lower than expected, some app users would look back over their last week's usage to help them to understand if there were particular time periods of high energy usage and consider what had caused this.

"If we get notification the balance is low on Wednesday and we normally top-up on Friday, I will look at daily usage to find out why, see what the gas, electric, standing charge is each day to compare."

(Male, 45-59, prepay customer, working part time, social renter)

These more circumstance-specific checks were more common than reports of ongoing monitoring of weekly or monthly usage, although a few participants did report such behaviours, for example to compare summer with winter, or to compare back to recent months.

"I'm always checking and comparing the previous month to, say, this month, for example. And if I see that, you know, I'm overusing in one way, then I'll try and, kind of, well not use as much energy."

(Female, 25-34, prepay customer, working part time, private renter)

Some also felt it was more convenient to use their app for monitoring consumption or credit balance than their IHD, because they tended to be using the app frequently to top-up. In this way, the apps served as a 'one-stop-shop' for them.

Others also felt it was more convenient because their phone was normally about their person whereas the IHD is in a fixed position. Therefore, it was more logical and convenient for them to look at their energy consumption or credit balance on their app.

"It was fairly easy to use the display, but we didn't really get on with it because it felt useless. It is easier to understand on the app."

(Male, 25-34, prepay customer, working full time, social renter, uses app, IHD not plugged in)

However, the Follow-up survey found that frequent app users were no less likely to use their IHD to check consumption or credit balance. 46% of frequent app users said they also used their IHD at least weekly, whilst 45% of non-frequent app users did the same. This indicates that, for most, the app was not being used in 'place' of the IHD, but alongside it.

Case study: Credit customer frequently using both an IHD and an app to understand his energy consumption and for account management.

John (50) works full time and lives with his family in a home which he owns.

John tends to look at his IHD a couple of times per week, although he initially looked at it every day when it was new. John describes the IHD as having increased his awareness of what the household is using at any given time. He finds it easy to quickly get a sense of this through the flame symbol which shows him that the heating is on. The IHD has also helped him be aware of how much his household usually spends by certain points during the day. It has encouraged him to investigate what is being used if it is more than expected.

“That visibility to show what your usage is, that is a good thing”.

Because of information seen on the IHD, John has adapted some of his behaviours – he now takes shorter showers after learning how much energy the shower uses. John is also considering re-doing his bathroom and intends to install a more energy efficient shower.

John also has an app. He was using this prior to having his smart meter installed and uses it to look at year-on-year and monthly usage data. John referred to information on his app when handling a bill dispute with his supplier. However, he finds he refers less frequently to the app now as he doesn't need to give meter readings.

John's use of the IHD and app has remained high over time - he still engages with each of them at least once or twice a week.

Online accounts

Two in three respondents (68%) said they had an online account with their energy supplier. This was much lower among those aged 65+ (52%) than all other age groups, particularly those aged 18-44 (88%). Those in households with higher household incomes were also more likely to have an online account. Both differences reflect national internet access statistics.²³

²³<https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2017/relateddata>, <https://www.statista.com/statistics/507537/distribution-of-household-internet-access-in-the-uk-by-household-income/>

Respondents did not tend to use their online accounts frequently to check their energy consumption or credit balance. 8% of Follow-up survey respondents used their account for this at least weekly.²⁴

Like with apps, prepay respondents with an online account were more likely to use it to look at energy consumption or credit balance information weekly (24%) than credit respondents with an online account (9%). However, prepay respondents were also more likely to have never used their account (37%, compared with 18% of credit respondents).

The qualitative interviews also explored how online accounts were being used. They found that in comparison to monitoring consumption via IHDs or apps, accounts tended to be used to monitor weekly or monthly usage, comparing from one period to the next.

A few participants specifically used the online account to see an estimated breakdown by appliance type, highlighting this as a unique feature of their online account. One participant found it useful that they could also compare their consumption statistics to similar households in the area.

Other examples of regular use of the online account included a prepay customer who did not feel technologically able enough to use the app or IHD, so used the account to check their balance and top-up. A credit participant used it to check if their account was in credit or debit.

However, some with an online account had never used it (20% in the Follow-up survey) or had used it just once for specific purposes, such as when switching or disputing a bill.

²⁴ This includes those who said they had access to an online account in either of the two surveys and those who said they had an app but never did this to allow for fair comparability with the findings on IHD engagement in Chapter 5.

7. Impact of smart meters on understanding of energy consumption

This chapter explores to what extent and in what circumstances smart metering, and key elements in the smart meter customer journey, were felt to have improved or not improved understanding of energy consumption.

Summary of impact on understanding of energy consumption

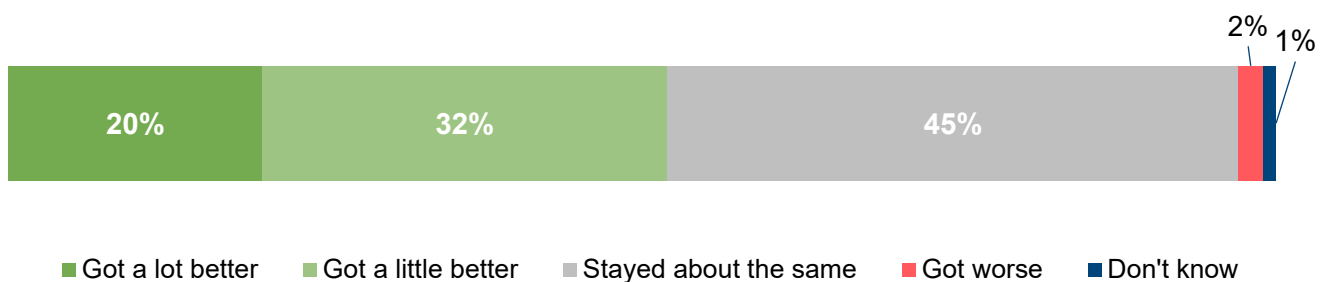
- Almost half (47%) of Follow-up survey respondents said their smart meter had helped improve that their understanding of their energy consumption over the year
- Prepay respondents were among those most likely to report their understanding to have improved *a lot* (31% compared to 18% of credit respondents)
- Key Drivers Analysis found that frequent IHD engagement and having received follow-up support from their energy supplier were the two drivers most associated with improved understanding
- The qualitative interviews found that many felt more in control of their consumption as a result of their smart meter and the survey findings supported this – around half reported an improvement in their understanding of their energy consumption and more than six in ten (62%) said their smart meter had made a difference to how their household used energy (see Chapter 8)
- The qualitative interviews identified four key ways in which smart meters were driving an improved sense of control:
 1. providing reassurance over accuracy of bills or remaining credit balance;
 2. providing immediate feedback on energy consumption;
 3. helping to control others' consumption;
 4. and more flexible top-up options for prepay customers

Understanding of energy consumption and impact of smart meters

Improvements in understanding of household energy consumption

Just over half of survey respondents (53%) said their understanding of their energy consumption had got better over the last year. One in five (20%) said it had 'got a lot better'.

Figure 21: Over the last year, would you say that generally your understanding of how your household uses energy has:



Bases: all Follow-up survey respondents – 825

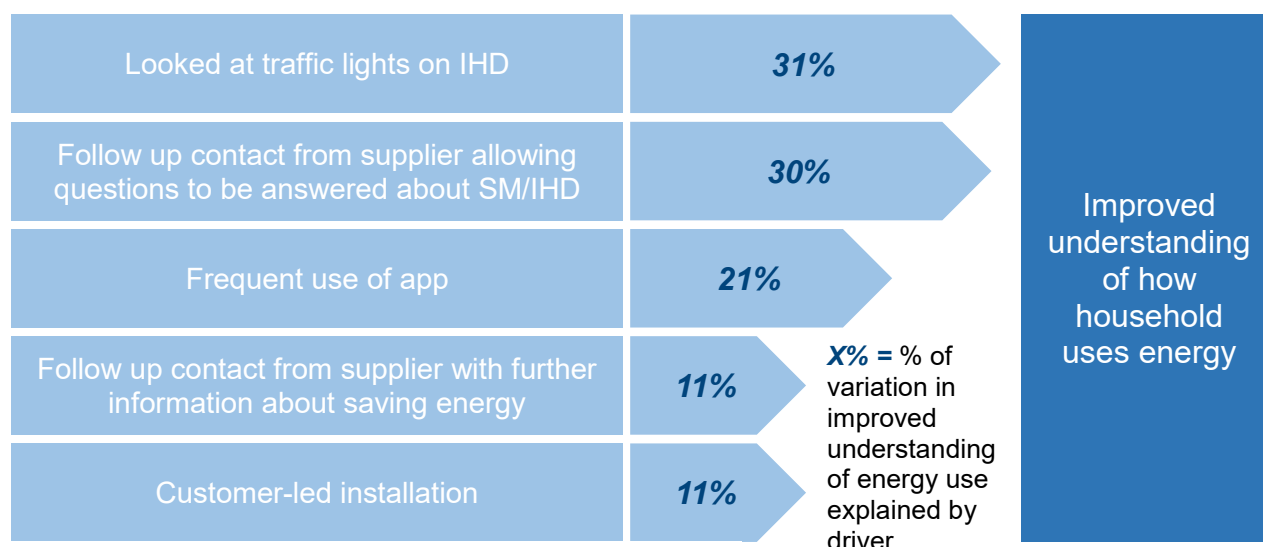
Prepay respondents (31%) were more likely to say their understanding had 'got a lot better' than credit respondents (18%).

Of those who said their understanding had improved, nine in ten (91%) attributed this at least partly to their smart meter. A quarter (27%) said that their improved understanding was entirely due to the smart meter or IHD, around one in three (37%) said it was mostly due to having a smart meter, and a further one in three said it was partly due to having a smart meter (28%). Fewer than one in ten (8%) said their improved understanding was nothing to do with their smart meter.

Overall, this means that around half (47%) of respondents said their understanding had improved at least partly because of their smart meter or IHD.

Those who looked at their energy consumption or credit balance on their IHD at least weekly were more likely to say their smart meter had improved their understanding (66%, compared to 34% of those who did not). As did those who were shown how to set a budget by the installer (60%, compared to 45% who were not) and calculate their household baseline (55%, compared to 46% who were not). Younger respondents were also more likely to say their understanding had improved because of their smart meter (59% of those aged 18-34, compared to 37% of those aged 65 and over).

Figure 22: Key driver analysis of improved understanding of how household uses energy



Base: all follow-up survey respondents – 825

Key Drivers Analysis found that looking at the traffic light display on the IHD²⁵ and receiving follow-up contact that allowed further questions to be asked about the smart meter and/or IHD, were most strongly associated with improved understanding of how households used energy (among the potential drivers tested)²⁶.

This was also corroborated by the qualitative interviews, which, found that seeing information about their energy consumption on their IHD had helped them to feel more aware and knowledgeable about how energy was being used in their home. Use of the traffic lights for 'quick reference' was particularly highlighted as contributing to this by enabling participants to quickly see whether their consumption level was within the range they expected, or whether something unexpected had been left on or was consuming more energy than had been realised.

As shown in Figure 22, using an app at least weekly to check energy consumption or credit balance was also associated with improved understanding of household energy consumption. Again, this was supported by the qualitative interviews, which found that prepay participants were especially likely to be using their app for this purpose.

²⁵ Frequent use of an IHD was not included because it was highly correlated with having looked at traffic lights on the IHD.

²⁶ In addition to the five drivers shown in Figure 25, other potential drivers were tested for association with the outcome (improved understanding of how their household uses energy). These were having received printed or tailored energy saving advice, a demonstration of how to set a baseline or budget and the respondent having set a baseline or budget. These additional variables were not included in the model either due to weak association with the outcome, or multicollinearity with other explanatory drivers that were included.

The interviews also found that in some instances where energy saving advice or follow up support was not received, participants felt less able to learn more about their household energy consumption. They felt they needed this guidance to help them get the most out of their smart meter, and as a result, felt dissuaded from engaging with their IHD or app. This may be why those who received follow-up support were more likely to feel their consumption understanding had improved.

Areas of improved awareness and understanding

Understanding overall household energy consumption

37% of IHD owners reported that their IHD had shown them something they did not already know about their household energy consumption: 21% said their IHD had shown them they were using more electricity or gas than they expected, while 23% found the IHD to show them they were using less than expected.²⁷

Respondents aged 18-45 were more likely to report this than those aged over 45 (45%, compared to 34%). Respondents who had been shown through each screen of the IHD by their installer were also more likely to report this than those who were not given this demonstration (39%, compared to 30%).²⁸

Qualitative interview participants commonly discussed feeling more aware of and having a greater understanding about their energy consumption as a result of having an IHD.

“I’m more aware of it now than I ever was.”

(Female, 65-74, credit customer, retired, owner-occupier)

“In summer it showed I’d used less than I expected. I was surprised and happy with myself.”

(Female, 18-24, credit customer, working full time, private renter)

One way in which the IHD can support customers in understanding their energy consumption is helping them calculate and track usage against a household baseline. Nearly a quarter (23%) of respondents had used this feature of the IHD. This was more common among younger IHD owners and those in households with three or more people.

Understanding appliance energy consumption

A third (33%) of IHD owners reported that the IHD had shown them a particular appliance was using more or less energy than they were expecting. Levels of awareness differed

²⁷ Note that respondents could have seen their household was using both more and less energy than they expected at different times, therefore these numbers do not sum to 37%.

²⁸ Note that those who did not have an IHD at PIS but did by the FUS were not asked about the demonstration. They have therefore been excluded from this comparison.

depending on whether installer had demonstrated how to do this (38%, compared with 26% not shown this by the installer).

The most common examples of this given by qualitative interview participants were kettles, tumble dryers, specific lights and electric immersion heaters, and were identified by sudden spikes in consumption shown on their IHD.

This improved understanding of appliance-level use led directly to behaviour change in some cases. This is discussed further in the next chapter of the report.

Feeling in control of energy consumption

The number of respondents who agreed they felt in control of their energy consumption was consistent across both phases of the research (86% Post-installation, 84% Follow-up). However, the qualitative interviews found that many participants felt more in control because of having their smart meter.

These conflicting findings may reflect the fact that people generally felt in control of their energy use prior to having a smart meter but realised they could be more in control after engaging with their IHD. For many, this was the first time they received salient information on their consumption in the form of real-time feedback. Responses to other questions in the Follow-up survey seem to support this. Despite consistency in the number reporting feeling in control of their energy use, around half of Follow-up survey respondents said their understanding of their energy consumption had improved (as above), and more than six in ten (62%) said their smart meter had made a difference to how their household used energy (see Chapter 8).

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

The interviews identified four key ways in which smart feedback had provided greater ‘control’ to the participants:

1. providing reassurance over accuracy of bills or remaining credit balance;
2. providing immediate feedback on energy consumption;
3. helping to control others’ consumption;
4. and more flexible top-up options for prepay customers.

Providing reassurance over accuracy of bills or remaining credit balance

Smart feedback provided credit respondents with reassurance over the accuracy of their bills. Some qualitative participants described using their IHD and/or app data to predict and back-check their billed amount. This had helped to avoid surprises, and participants described increased levels of trust in their supplier as a result.

“Before they [my supplier] estimated [consumption], too much, or less, but now they see exactly what we are using ... and I can compare from last year.”

(Male, 75 and over, credit customer, retired, private renter)

Smart feedback provided prepay participants with reassurances over their remaining balance and how long their credit would last, facilitated via the low credit alert and auto top-up facilities. This helped prepay participants to feel in control of their balance.

“You don’t get that fear of ‘oh my god, I’m going to be in the shower and it’s just going to cut out, dead.”

(Female, 25-34, prepay customer, working full time, private renter)

Providing immediate feedback on energy consumption

Participants also described how their IHDs provided immediate feedback on the energy consumption of different household activities, for example, a spike in usage when using a washing machine. For unintended appliance use, this acted as red-flag, alerting them to appliances they did not realise were left on.

Use of the IHD in this way was also found by the Follow-up survey. Nearly a quarter (23%) of IHD owners said they used their IHD to check that nothing had been left on in the house when they went out or went to sleep. This was more common among respondents on low incomes (28%). 71% of respondents who felt their understanding of their energy consumption had improved as a result of their smart meter frequently²⁹ used their IHD in this way.

“With the smart meter it gives you that visual prompt. You think about what you’re using and how you’re using it.”

(Male, 45-59, credit customer, working full time, owner-occupier)

Helping to control others’ consumption

The IHD was also used by a quarter of IHD owners (22%) as a tool to encourage others in their household to reduce energy consumption, with 12% doing so weekly. The qualitative interviews also found evidence of bill payers using information on the IHD to encourage behaviour change among others in the household. In some cases, they had wanted to do encourage these changes before, but the IHD provided evidence to help them. There was one example among the in-depth interview participants of a family using the IHD as part of a weekly family discussion on how to save money through reducing their energy consumption. Those in lower income households were more likely to have used the IHD for this purpose.

“I have to control it with the children, you know, I teach them about saving energy.”

²⁹ Frequently defined as using their IHD at least weekly to check that nothing is left on in the house when they go out or go to sleep.

(Male, 75 and over, credit customer, retired, private renter)

There was also evidence, however, to suggest that there was further, untapped potential for the smart meter and IHD to help some research participants feel more in control of their consumption and their bills. For example, only one in ten (10%) IHD owners in the Follow-up survey respondents had used their IHD to set a household energy budget, but use of this feature was often highly associated with customers reporting positive outcomes. The qualitative interviews also provided a few examples of customers that had used their IHD or app to set a budget and found this useful, as illustrated in the case-study below.

Case study: Frequent use of an app which helps to increase feelings of control.

Frances (30) is a student and also a recent divorcee, with a young son to support. She is a prepay customer, which she finds helps her keep in control of how much she spends on energy. She is always keen to find new ways to stay on top of her spending and to make financial savings.

Frances uses her smart prepay app often to top-up her credit-balance around twice a week, to check her credit alerts (helping her to predict when she may next need to top-up), and to check her consumption against a budget.

Frances thinks the app has made a big difference to her understanding of her energy consumption and has helped her reduce her spending significantly. She uses it to set monthly targets and keeps track of weekly and monthly consumption. If it looks like she will not hit the target, Frances will make changes to her behaviour. For example, Frances will avoid using the tumble dryer on days when she can see that her consumption has been high.

More flexible top-up options for prepay customers

As detailed in Chapter 4 and Chapter 6, prepay customers were highly enthusiastic about the greater sense of control they felt over their consumption and credit balance provided by having more flexible top-up options (apps, telephone and online). Qualitative interview participants often highlighted how they were no longer worried about running out of credit unexpectedly because they could now top-up without having to leave the house, or on-the-go.

Other factors potentially contributing to feelings of control over energy consumption

As above, this research identified numerous ways in which smart metering was supporting respondents to feel in control, but it is also likely that this is influenced by a wide range of external factors which were not captured in the surveys.

For instance, potential factors could include changes in energy prices, changes in the weather, changes in household composition or the way in which others in the home use energy, among others. These types of factor might help to explain why 52% reported an improvement in their energy consumption understanding over the year, whilst the

proportion of respondents saying they felt in control of their energy consumption (although already high at 86% Post-installation) did not rise.

Household engagement with IHDs and apps

The household interviews found that impacts could often vary within households, because different members engaged with the IHD in different ways, and with varying intensity and enthusiasm.

Subsequently, the interviews uncovered a range of impacts within households to the information shown on IHDs. For example, some members of households described the information shown on the IHD providing them with an increased sense of control and reassurance over bills or levels of spending. In contrast, the impact on others within the same home had been to motivate them to make changes to their energy consumption habits and routines (which was not necessarily the case for the former).

The qualitative interviews with multi-person households similarly found that there was nearly always one member of the household who was most engaged with an app; a consequence of the app most commonly being downloaded on one member of the household's mobile phone.

In credit households, this appeared to most commonly be the person who took charge of paying household bills and who tended to refer to the app for account management purposes. In multi-person prepay households, ownership of an app was more varied and multiple members of households had sometimes downloaded the app, so they could all top-up when required.

8. Impact of smart meters on energy consumption behaviour

This chapter explores to what extent and in what circumstances customers felt their smart meter had contributed to more energy efficient behaviour.

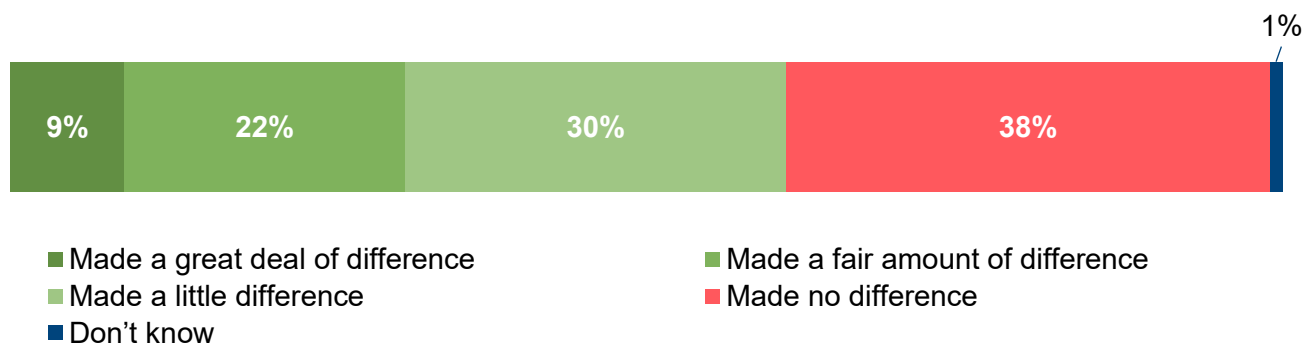
Summary of reported impact on energy consumption behaviour

- More than six in ten (62%) Follow-up survey respondents felt that having a smart meter had made a difference to how they use energy in their home
- Frequent IHD use (through the traffic light display) and the customer having requested their smart meter installation were the two drivers most strongly associated with this
- One in six (18%) respondents had installed energy efficient lightbulbs since their smart meter installation, but installation of other energy efficiency measures was much less common
- Around two in ten respondents perceived a decrease in their household energy consumption over the year
- Many qualitative interview participants had also taken up 'replacement' behaviours, such as drying clothes outside where possible, instead of using a tumble dryer
- The qualitative interviews suggested that a lack of, or low-quality, advice during the customer journey limited the potential impact of smart meters and IHDs for some customers
- More than half (56%) of Follow-up survey respondents reported there was further information or advice they would like to receive, most commonly around changes they could make to their home (35%) or behaviours (32%) to improve energy efficiency

Self-reported impact of smart meter on household energy consumption

More than six in ten (62%) Follow-up survey respondents felt that having a smart meter had made a difference to how their household used energy. Almost a third (31%) said a smart meter had made a great deal or fair amount of difference to how energy was used in their home, and a further third (30%) reported that it made 'a little difference'. 38% reported it to have made no difference.

Figure 23: Would you say that having a smart meter including the in-home display/ smart energy display:



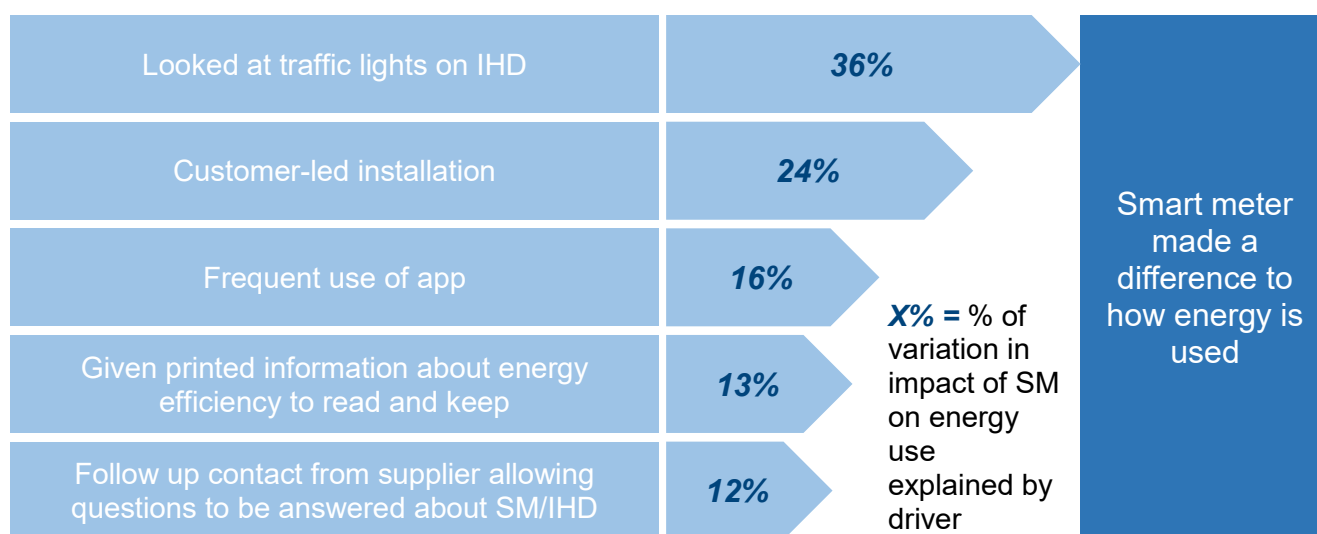
Base: all Follow-up survey respondents – 825

Prepay respondents were more likely to report the smart meter to have 'made a great deal of difference' to how they used energy (26%) compared to credit customers (6%). The qualitative interviews suggested that this difference may be the result of the new convenient top-up options for prepay customers, which gave them more freedom and control over their energy use, and their enhanced ability to monitor their credit balance, which helped them figure out what activities or behaviours were consuming energy.

As shown in Figure 26 below, Key Drivers Analysis found that frequent use of the IHD (specifically using it to check on levels of usage through the traffic light display) had the strongest association (among potential drivers tested³⁰) with the respondent feeling their smart meter had made a difference to their energy consumption. As discussed in Chapter 5, the traffic light display was one of the most used features on the IHD and was often referred to as the key element of consumption monitoring throughout the day.

³⁰ In addition to the five drivers shown in Figure 26, other potential drivers were tested for association with the outcome (having a smart meter made a difference to household energy use). These were having received tailored energy saving advice at installation, follow-up contact with energy saving advice, a demonstration of how to set a baseline or budget, and the respondent having set a baseline or budget. These additional variables were not included in the model either due to weak association with the outcome, or multicollinearity with other explanatory drivers that were included.

Figure 24: Key driver analysis of smart meter impact on how energy is used in the home



Base: all Follow-up survey respondents – 825

The Key Drivers Analysis also found that the customer having requested the installation themselves was associated with feeling an impact on the household's energy consumption. It is possible that this reflects a degree of confirmation bias – those who actively sought out a smart meter may be more likely to want to see it have an impact.

Frequent use of an app to check energy consumption or credit balance was also associated with the outcome, and, like with other positive outcomes described in this report, so was having received printed energy saving guidance and follow-up support from the energy supplier.

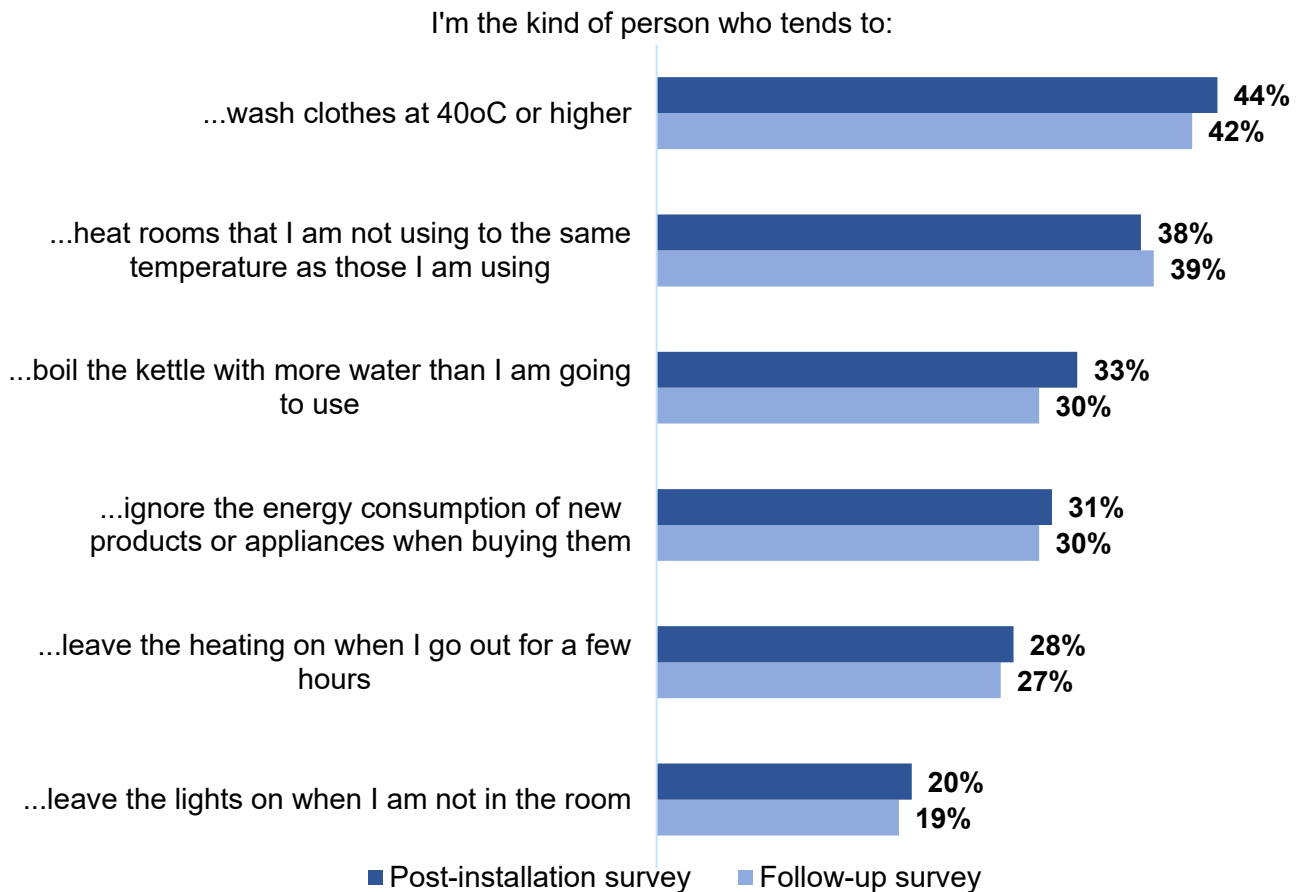
Behaviour changes as a result of a smart meter and/or IHD

Changes to habits and routines

Respondents were asked whether they tended to practice a range of energy inefficient behaviours in their home, before considering any impact of smart metering on such habits. This provided a baseline for energy efficient behaviour within the households surveyed.

As shown in Figure 25 below, a significant minority of respondents agreed that they tended to practice a range of inefficient behaviours. Only 19% reported that they tended to leave the lights on when not in the room, whilst washing clothes at 40 degrees or higher (42%) and over-heating rooms that were not being used (39%) were more commonly reported. The number who said they practice these behaviours was largely consistent across both survey waves.

Figure 25: I am now going to read out some things that people may do in their homes. For each one, again thinking about the last few months, please tell me to what extent you agree or disagree with the statement

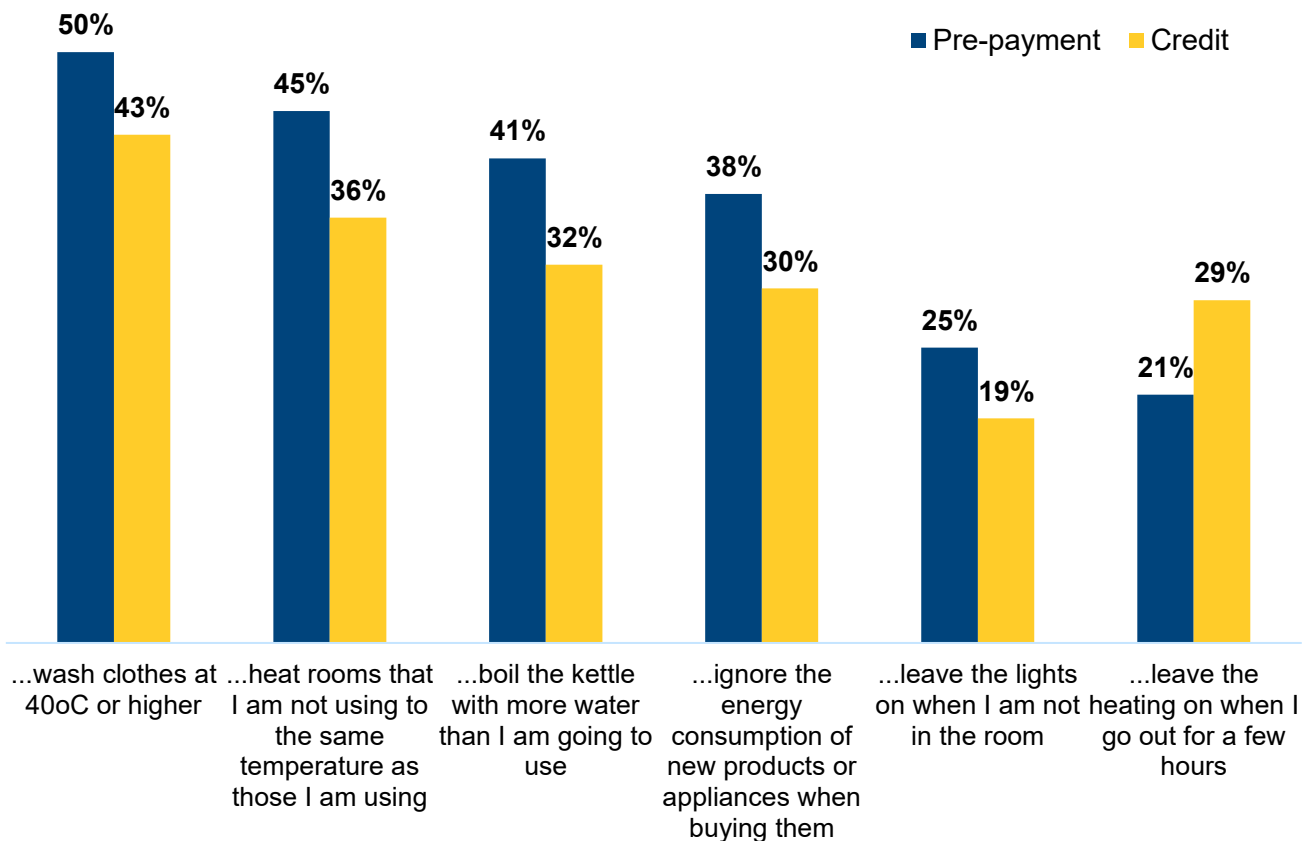


Bases: all Follow-up survey respondents – 825, all Post-installation survey respondents – 2,015

It is interesting to note that prepay respondents were much more likely to report practicing these energy inefficient behaviours than credit customers. As with the overall sample, the number remained consistent across both surveys, but this difference provides important context for the changes respondents said they made because of their smart meter (discussed below).

Figure 26: I am now going to read out some things that people may do in their homes. For each one, again thinking about the last few months, please tell me to what extent you agree or disagree with the statement

I'm the kind of person who tends to:



Bases: all Post-installation survey respondents - 2,015, prepay respondents - 469, Credit respondents - 1,546

Changes to habits and routines as a result of having a smart meter

As above, more than six in ten (62%) Follow-up survey respondents felt that having a smart meter had made a difference to how their household used energy. These respondents were then asked more specifically what those changes were.

Of those who felt their smart meter had made a difference to how they used energy, eight in ten (77%) said that they were generally less wasteful in how they used their appliances. For each of the more specific behaviours below, around a half said they had adopted that behaviour as a result of having a smart meter and/or IHD. Almost nine in ten (86%) said they had made at least one of these changes:

- Leaving the lights on less often when not in the room (54%)
- Do not leave the heating on when leaving the house for a few hours (54%)
- Do not boil more water in the kettle than needed (54%)

- Try not to heat rooms that were not in use to the same temperature as those in use (53%)
- Wash clothes at 30 degrees or lower more often (46%)

Prepay respondents were much more likely to say they had made at least one of these changes (96%, compared to 84% amongst credit respondents who reported a difference in how they used energy as a result of their smart meter). This may reflect that they tended to be less likely to have been doing these things before the installation of their smart meter, such that there was greater room for improvement for prepay respondents.

Respondents aged 18-44 were more likely to have made at least one of these changes (90%, compared to 84% of those aged 45 and over). However, they were no more likely than other age groups to report practicing energy inefficient behaviours. Respondents in single person households were less likely to have made at least one of these changes (80%, compared to 88% in households of 2 or more). The qualitative interviews suggested that this may have been because the larger households had more potential to save energy or, in some cases, because they could all see the information on their IHD.

The qualitative interviews also provided more detailed examples of how the smart meter or IHD specifically as well as the wider customer journey had contributed to these changes in habits and routines:

- Many said they were already **turning lights off more regularly** or had started in the last 12 months due to external factors, such as financial pressures. However, some had been prompted by information on energy consumption seen on the IHD, or by energy saving advice provided by the installer;
- Some recalled the installer using their IHD to demonstrate the reduction in spend on energy achieved by **turning appliances of standby** and in some cases, participants reported unplugging their appliances more regularly as a result;
- **Decreasing length of showers** after seeing on the IHD that this used a lot of energy;
- **Reducing use of immersion heater**, for example from 90 minutes per day to 30 minutes, prompted by information seen on the IHD;
- One participant had **reduced their use of a gas fire** due to seeing how much energy it consumed on their IHD (although this was more frequently motivated by financial concerns, or a feeling that the winter had been mild);
- **Comfort taking** for example one couple now keep the heating on overnight after checking what this would cost on the IHD and deciding it was worth the increased bills as they feel the cold due to their age;
- Some participants reported **reducing their heating use** as a result of seeing information on their bills, which showed them how much their heating was costing them.

While looking at the IHD was generally associated with a positive outcome in terms of improved understanding of energy consumption, there were isolated instances of data seen on the device being misinterpreted or contributing to sub-optimal energy consumption behaviours. In a few cases, the way in which data is displayed on the IHD -

whereby participants focused on appliances which showed a short term usage spike on the traffic light display - may have contributed to more *inefficient* behaviours.

An example is the contrast between an oven and a microwave. An oven shows less of a 'spike' in energy consumption, but it takes longer to cook food than a microwave does. This means it uses more energy overall, but some participants did not realise this was the case because the traffic lights were red during microwave use, but amber during oven use.

There were also isolated instances of participants linking information they had seen on their IHD to under-heating due to worry about the cost. One participant therefore turned off their IHD and began to heat their home more after they stopped using it.

Replacement behaviours

In some cases, participants had made *replacement* behaviour changes because of **information they had seen on their IHD**, such as drying clothes outside instead of using the tumble dryer or using a microwave or slow cooker instead of the oven. Such changes were commonly prompted by changes in the traffic light display as and when these appliances were being used.

Some participants also linked adoption of replacement behaviours to other information received throughout during their installation and follow-up contact from their energy supplier. Examples of this included using the central heating more after being told that it was more efficient than using gas or electric heaters, and replacing or reducing use of lightbulbs in the home that were highlighted as inefficient.

Energy saving purchases and changes to purchasing behaviour

One in six Follow-up survey respondents (18%) said they had installed more efficient lightbulbs since the installation of their smart meter. Of these respondents, 48% said they did this at least partly because of their smart meter. This was the purchasing behaviour most commonly attributed to the smart meter and/or IHD in the qualitative interviews. It is possible this reflects a focus on upgrading lighting in energy saving advice provision, however participants struggled to recall detail of the specific advice provided.

In addition, 6% had installed a more efficient boiler since the installation of their smart meter. Of these 49 respondents, 9 replaced their boiler at least partly because of their smart meter, although most (39) said it was entirely because of other reasons.

Even smaller numbers of respondents had installed other large energy efficiency measures since the smart meter installation (such as loft or wall insulation, draught-proofing and double-glazing), with only a handful in each case attributing this in some way to their smart meter and/or IHD.

Two in five survey respondents (38%) said they had installed or upgraded a variety of heating controls³¹ since the installation of their smart meter. However, only 15% of these respondents said that this was at least partly because of their smart meter and/or IHD.

Corroborating the above, some qualitative interview participants said they had been encouraged to make more energy efficient product choices specifically as a result of information they had seen on their IHD. In one example, a participant cited energy efficiency as one of their “top criteria” when buying a new boiler and said this was because their IHD had made them more aware of how much energy their old boiler was using, and indeed prompted them to finally get a new boiler, after a long time deliberating.

“I think what tipped me over in terms of getting a new boiler was seeing those pounds and pence.”

(Female, 25-34, credit customer, working full time, owner-occupier)

Private renters

Private renters often need to engage with landlords to make changes to their home which can act as a barrier to behaviour change. Therefore, this was a group of particular interest.

Private renters in this study were generally quite engaged with the information they saw on their IHD and/or app and were making changes to their behaviour as a result.³²

Qualitative interview participants who were private renters did not highlight any larger, structural or other property-related actions that they were keen to implement but felt restricted in doing so because of their tenure.

As with the overall sample, the main response to smart meter information was for these households to look at their own habits, or to consider energy efficiency performance in appliance purchases, rather than encouraging larger, structural changes (that might need landlord permission). In fact, the survey data highlighted that private renters tended to be more likely to engage with some features of the IHD, such as checking nothing is on when they go to bed or setting a household baseline, than owner-occupiers. It is possible though that this reflects that private renters are, for instance, more likely to have lower household incomes and be concerned about paying their bills.

³¹ The heating controls asked about were thermostatic radiator valves, central thermostats, programmable thermostats and smart thermostats.

³² It should be noted that all private renters involved in this study were direct account holders and were present for the smart meter installation visit, as this was a requirement to qualify for the survey (to ensure questions could be answered). This means they do not represent the experiences of those whose landlords manage energy billing on their behalf, nor those whose landlord chose to have a smart meter installed at the property.

That said, a few qualitative interview participants who rented privately did note they had faced barriers in making energy efficiency related home improvements before getting a smart meter. One renter had unsuccessfully campaigned for their landlord to install higher quality and minimum thickness loft insulation, for example. Others had assumed that their landlord would not be amenable to making such improvements and so they were deterred from trying to discuss these with them. A few of these participants expressed interest in installing more energy efficient technology when they owned their own home.

Perceived impact on household energy consumption

To evaluate the impact of smart meters on energy consumption, statistical analysis of actual consumption data is required. It needs to compare the consumption of smart meter customers to what would have been consumed if they didn't have a smart meter. It is extremely difficult for consumers to judge how much energy they would have used if they didn't have a smart meter. For example, there are a wide range of factors that influence energy consumption (including those identified by the survey respondents in this study and reported in this chapter) which people would need to account for in their judgement (like changes in the weather over time). These need to be controlled for to isolate the impact of the smart meter on their consumption.

Although self-reported perceptions of consumption change cannot provide for a robust impact evaluation, survey respondents were nonetheless asked about these perceptions because it is also important to understand whether consumers *feel* there is an impact. These perceptions have implications for consumer engagement around the rollout of smart meters. The following section discusses these perceptions.

Electricity consumption

A fifth (21%) of Follow-up survey respondents felt their electricity consumption had decreased over the past year, whilst 14% felt it had increased. Most respondents (62%) felt their electricity and gas use to have remained the same over the last year. Analysis of the survey data found there were no strong correlations between respondents reporting a decrease in consumption and potential drivers, such as frequent IHD or app engagement, receiving energy saving advice or follow-up support.

Of those who said their electricity consumption had decreased, 14% said they thought this was because of having a smart meter and/or IHD. The main reason given for the decrease in electricity use was that they were using appliances differently (45%). In addition, 16% attributed decreased usage to new or upgraded lighting, while 16% said it was due to generally being more aware of their consumption. Respondents may or may not have felt these were attributable to their smart meter and/or IHD by extension.

Those who felt their electricity consumption had increased mostly attributed this to using electric appliances differently (42%), people spending more time in the house (22%) and more people living in the household (20%).

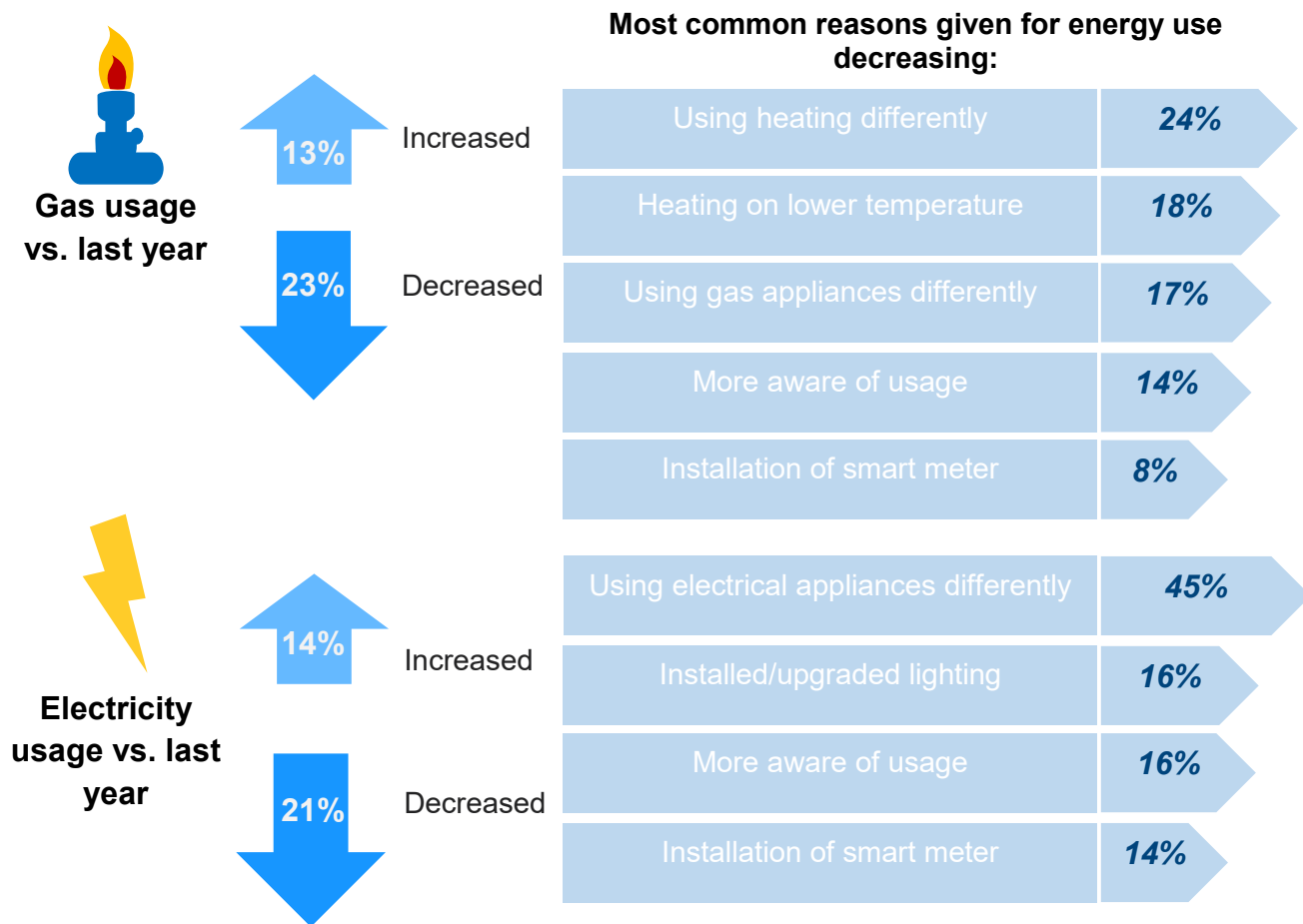
Gas consumption

Follow-up survey respondents reported responses in relation to their gas consumption. Decreases in gas use (23%) were also more common than increases (13%), although again most reported that their consumption had not changed (60%).

Among those reporting their gas use to have decreased, 8% said they thought this was because of having a smart meter and/or IHD. The main reasons given for decreased gas consumption were that they were using heating differently (24%), that they were setting the heating to a lower temperature (18%) or that they were generally more aware of their usage (14%). Respondents may or may not have felt these were attributable to their smart meter and/or IHD by extension.

Those who said their gas consumption had increased most commonly attributed this to changes in the weather (37%), having the heating on more (26%), spending more time in the house (24%) or there being more people in the household (22%).

Figure 27: What do you think has led to the amount of electricity/gas your household uses decreasing?



Bases

For electricity: all Follow-up survey electricity-only respondents – 825

For gas: all Follow-up survey dual-fuel respondents - 789

Reasons for limited impact amongst customers

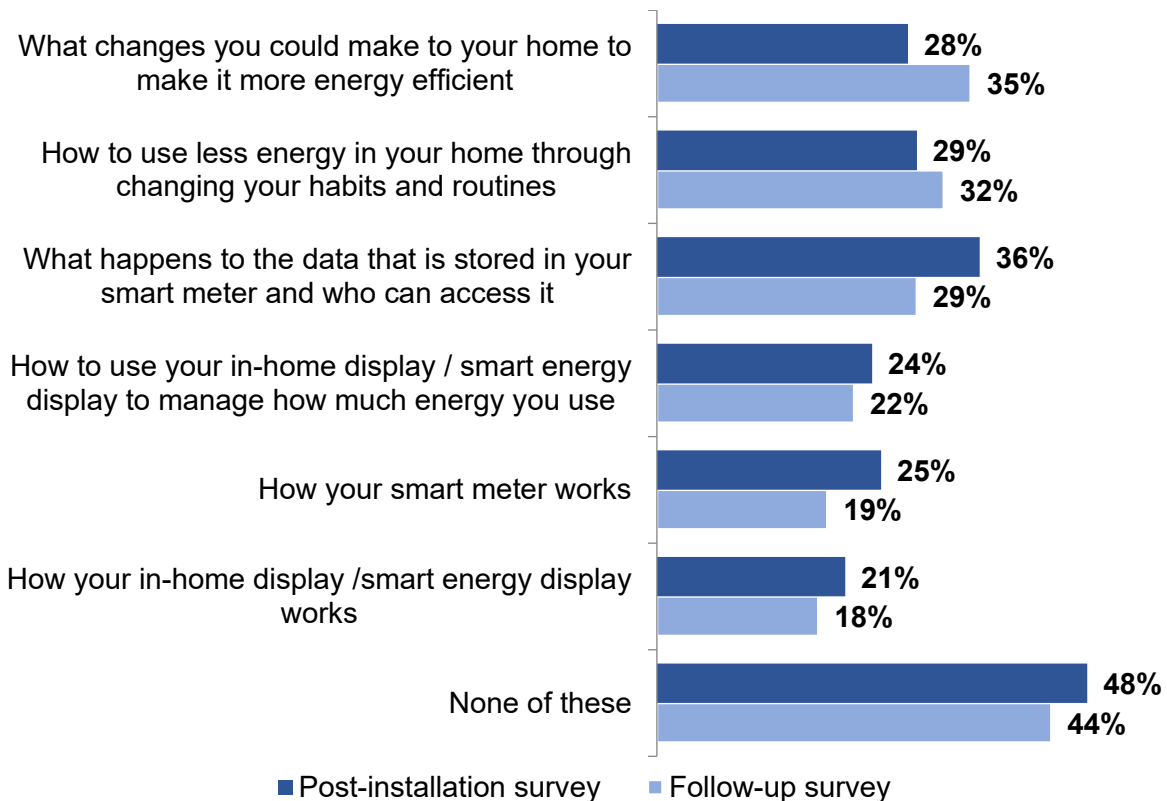
Insufficient advice and information

While the study found that smart meters have impacted positively on the energy consumption behaviour of most respondents, nearly four out of ten (38%) Follow-up survey respondents said that having a smart meter had made no difference to how their household uses energy.

For these respondents, the qualitative interviews and Key Drivers Analysis suggested that the provision of further information and advice, preferably tailored to the respondent and their household circumstance, would have helped increase their engagement with smart metering generally, and specifically information provided through the IHD and how this can be used to reduce wasteful household energy consumption.

Furthermore, more than half (56%) of Follow-up survey respondents reported that there was further information or advice they would like to receive in relation to their smart meter (consistent with the 52% who said the same in the Post-installation survey). The qualitative interviews also found that even when some participants said they didn't want information, it actually reflected uncertainty about what other guidance could be provided (in terms of both content and format).

Figure 28: Topics that survey respondents wanted more information on



Bases: all Post-installation survey respondents – 2,015, all Follow-up survey respondents – 825

The most commonly requested additional information was on changes which could be made to the home to make it more energy efficient (35%), followed by information on changes to habits and routines which could reduce energy consumption (32%).

The qualitative interviews suggested that, in some cases, these information needs may have arisen due to insufficient energy efficiency guidance provided at installation.

[When prompted to look at radiator valves] “Oh yeah, we never think about these things. Is that the thing where it goes 1 to 5 on the radiator? We just keep it on 5”

(Male, 25-34, prepay customer, working full time, social renter)

[When prompted to discuss appliance purchases] – “To be fair I never understand that part of the purchase [the energy efficiency label]. I’ve never understood, you know when it says A for energy or whatever, I have no idea what that means, I just buy them”

(Male, 25-34, prepay customer, working full time, social renter)

As discussed in Chapter 4, most participants felt that the installation was satisfactory and gave them all the information they needed. However, the interviews also highlighted that:

- **Every installer is different:** while suppliers may have a prescriptive process for how installations should be carried out and what information should be provided, the interviews revealed that some installers took more time than others to explain how the smart meter/ IHD worked and to check the customer’s level of understanding. Participant re-call suggested significant variation in what level of information was provided and how tailored it was.
- **Every customer is different:** customers vary greatly in their affinity with technology, and their approach to learning how to use new technology. For example, some participants said they preferred to read written materials in their own time and to ‘learn by doing’. Such participants tended to be happy for the demonstration given by the installer of their IHD to be fairly quick and light touch. Others explained that they struggled to understand written materials and needed a far more intensive demonstration and engagement with the installer to understand the full functionality of the IHD, which was not always provided.

The case study below highlights how one participant believed additional information could have helped her to save energy.

Case study: Satisfied user of IHD, but would value further advice and tips

Sarah (61) works full time and lives in social housing. She is a credit customer and is overall very satisfied with her smart meter/ IHD

Sarah feels the IHD has helped her **feel more in control** of her energy consumption by **increasing her awareness of what uses the most energy around her home**. In response to this information, she has been **changing the way she uses those appliances**, including turning lights off and reducing her use of the tumble dryer and heating.

“I’ve become more aware of what I’m using because I can see it.”

However, Sarah thinks she was only given a partial demonstration of her IHD during her installation. Now, Sarah **would still like more information** about some of the other functions offered by her IHD, **such as budget setting**.

Sarah also does not think she was given any energy saving advice at her installation visit, although she **would have liked to be given information about how to use energy more wisely** – either at the visit or through follow-up contact. She felt this information would have helped her make more efficient use of energy in her home.

A quarter of those on lower incomes wanted further information about how their smart meter worked (25%) and how their IHD worked (22%). This was significantly more than those in the highest income category (for whom the corresponding values were 12% and 11%, respectively).

The qualitative interviews also suggested that a lack of support provided to more vulnerable customers had led to difficulties in them realising benefits from their smart meter. Although not representative of the experience of the vulnerable consumers included in this study, the case study below highlights a singular case where a prepay customer felt ill-equipped to use her smart meter because the installer did not provide the support required by SMICoP and little follow-up support was given.³³ Whilst on the whole this study highlights a highly positive prepay experience and impact, this example highlights how poor consumer engagement can lead to a detrimental experience for prepay customers.

³³ SMICoP requires smart meter installers to provide [IHD demo, prepay functionality, EE advice, tailored and adapted to the needs of vulnerable consumers]

Case study: Lack of tailored supported leading to difficulty topping up prepay

Patricia (50) is currently unemployed due to mobility issues and rents her home from a local housing association. She has been a prepayment customer for a long-time and has always topped up at her local shop using a key and card.

Patricia has downloaded an app that she knows should allow her to top-up from anywhere, including from home which would be good for her as she struggles to walk very far. This would also be more convenient now that her local shop has stopped offering top-up services, which means she must walk even further to top-up.

Patricia has not been able to use the app to top-up, however, because she doesn't understand how to log in and transfer the money. She continues to top up at the shop, and does this twice a week, separately for electricity and gas.

Since having her new prepay cards, Patricia feels anxious about whether her top-up is registering on her meter. She finds it difficult to see whether her balance has updated on her IHD and worries that the new credit has not gone through. This sometimes means that she goes back and forth from the shop to home to check the IHD.

"I feel panicky about whether the money has gone onto it or not"

Patricia's installer was in and out of her home very quickly and did not take the time to explain the IHD to her or show her through key screens.

Patricia called up her supplier to ask for further support using the IHD and understanding how to find her balance information. She asked if someone was able to talk it through with her, or ideally visit her at home. Patricia was advised that they couldn't do this and said she should instead read the booklet she was given at the installation visit. Patricia has struggled to read this booklet and says she lacks confidence in diagnosing any problems with her IHD herself.

Overall, Patricia has had a very negative experience of smart prepayment and is now advising her friends and family not to get one:

"I'm telling people not to get one, especially if they don't understand technology... I feel more worried than when I had the old meter in the cupboard as I can see it [the IHD] more, I see it [my credit] going down a lot."

Some who had not pro-actively requested their smart meter seemed less interested and engaged than those who had

Those who had responded to a supplier request to have a smart meter installed were more likely to say that having a smart meter had no impact on how they used energy than those who initiated the installation themselves (39%, compared to 30%).

This may reflect that customers who had requested an installation were more enthusiastic about smart meters and therefore more open to behaviour change in response to IHD information. This was reflected in the attitudes and experiences of qualitative interview participants. Those who had been contacted first by a supplier tended to be less motivated to change their behaviour. This was particularly the case where their smart meter had been installed as part of a switch to a new supplier to get a cheaper tariff.

Some participants expected more from their smart meter or IHD, and felt they were not able to realise the benefits they had hoped

A handful of interview participants felt that the consumption feedback provided by their smart meter did not meet their pre-installation expectations. For example, some thought that the IHD would provide appliance-level consumption breakdowns, which would in turn have helped them to save energy by reducing their use of more intensive appliances. In other cases, participants had seen marketing materials containing more visually appealing IHDs and were disappointed in their own by comparison, believing a more appealing and seemingly better-designed IHD would help draw attention to high usage activities.

Some also reported that their IHD did not work or had stopped working. Given the evidence presented in this report on the association between IHD use and targeted outcomes, this is likely to have significantly affected the ability of these households to maximise the potential benefits of smart metering. However, this was not a widespread problem, with only 3% of IHD owners in the Follow-up survey reporting this as a reason for unplugging their IHD.

Larger households were more likely to report changes in how they used energy

Those living in single or two-person households (59%) were less likely to say their smart meter had an impact on how their household used energy compared to those living in larger households (71%).

Some qualitative interviews suggested that this may have been because there were greater potential savings in homes greater in size or with more people in them, and because the IHD facilitated household-wide awareness raising of wasteful consumption.

However, others in large households said that the impact had been limited where they had been unsuccessful in gaining interest from others. For example, some participants said that although they set their heating on a timer, other members of the household would turn the heating on manually.

Some underestimated their ability to reduce wasteful consumption

Some qualitative interview participants reported that they did not feel there was much more they could do to save energy, but the researchers found that this self-assessment varied in accuracy.

For example, many participants listed several 'easy wins' they were already doing, such as turning off the lights or not over-filling the kettle. However, several of these participants

required prompting to think of things they *could* be doing but were not currently, such as closing internal doors to keep the heat in. This awareness gap may be an example of an unmet information need amongst the participants, which had it been bridged, may have led to further increases in energy efficient behaviour.

Changes were halted by inconvenience and reduced comfort

In other cases, participants were aware of changes they could make to save energy but chose not to. This was sometimes due to the inconvenience they caused. One participant noted that turning off their appliances that had clocks meant they constantly needed to be reset, so they stopped turning them off.

Similarly, and relevant to the point that many were seemingly unaware of ways they could reduce the amount they spend on heating, participants often discussed making trade-offs between reducing their consumption and keeping warm, with the latter taking priority.

“I’m a fiend when it comes to central heating, I am always using the heating. Like I’m not stingy in any way, shape, or form”

(Female, 25-34, prepay customer, working full time, private renter)

Conclusions

This section summarises key findings from across the different strands of analysis conducted on both waves of survey data and the qualitative interviews and details a series of associated conclusions based upon these findings. These conclusions reflect the views of the researchers, rather than the opinions of BEIS, and only go as far as the survey and qualitative interviews findings allow.

Overall, most customers were satisfied with their smart meter experience – and this is consistent with earlier in the rollout

This study echoes the positive findings of the Early Learning Project (ELP), conducted with customers who had installations between 2011 and 2013. The vast majority of smart meter customers were satisfied with their smart meter experience: three-quarters (74%) reported satisfaction a year after installation in this study, against the 72% reported satisfaction in the ELP research. Similarly, nine in ten (89%) reported being satisfied with their installation – the same as in the ELP. These high levels of satisfaction were, for the most part, sustained over the year following installation.

Thus, this research indicates that positive customer experiences have been maintained as the rollout has expanded in both size and diversity, with prepay customers now included at scale and more of those in more vulnerable circumstances also included. This is positive evidence to suggest the rollout is effectively engaging a wide variety of customers and households in smart metering.

Smart prepay customers were especially satisfied and found their smart meter experience to be transformative

This study also revealed an especially positive experience amongst prepay customers, which is encouraging given that they are more likely to be in vulnerable circumstances.

The study found that smart meters bring significant benefits to prepay customers through thus the improved visibility of consumption information, which can help them keep on top of their credit balance and consumption. It also found that the availability of new top-up options and the reduced need to interact directly with the meter – which can often be inconveniently located – are regarded as key smart meter benefits by consumers. The study's findings thus show that prepay respondents were realising these key benefits and were consequently strong advocates of smart metering.

The importance of social influence

The findings on pre-installation attitudes towards smart metering and the decision to get a smart meter strongly highlight the importance of social influence at this stage. After energy suppliers, word-of-mouth was the most commonly cited source of pre-installation

information about smart meters - prepay and vulnerable participants in particular often said they had heard about the benefits of having a smart meter from people they know.

After getting a smart meter, some of the highly satisfied participants described how they had also begun to spread the word about the benefits of smart meters themselves, particularly regarding new top-up options.

This demonstrates how a single positive experience can encourage others to adopt a smart meter, and that social influence is already a powerful factor in driving adoption of and positive attitudes towards smart metering and could continue to do so in the future. Ensuring a consistently high-quality customer experience of smart metering can be expected to increase consumer support and uptake, and negative experiences could have the opposite effect.

Uptake of the IHD offer remains very high, with a relatively small fall in use over time

Also, and in line with the ELP, uptake of the IHD was very high with 95% accepting the offer (of the 92% who recalled it), demonstrating the continued popularity of the offer.

Interestingly, this longitudinal study found that in the first year of IHD ownership, the 'novelty effect' around IHDs was arguably modest. By the end of the year, eight in ten (80%) said their IHD was still plugged in and in use – a relatively small decrease from the nine in ten (88%) who said the same just after installation.

In line with what previous research has suggested (such as the Early Learning Project), there was a trend of less frequent IHD engagement throughout the year. Just under half of IHD owners reported that they looked how much energy they were consuming at least weekly (45%), a decrease from two-thirds earlier in the year (67%). However, only a small proportion ceased to engage with their IHD altogether. Seven in ten (70%)³⁴ continued to monitor their consumption on their IHD to some extent.

Use of smart meter-enabled apps was limited overall, but was a core part of the experience for prepay customers

Although not prevalent amongst credit respondents (19%), smart meter-enabled apps were in widespread use across prepay respondents and formed a core part of their experience. Seven in ten (70%) said they had one. The use of the top-up feature was the primary reason for this, with eight in ten (83%) prepay respondents with an app reporting it was the top-up method they most often used.

Another feature of the apps was the display of energy consumption data, but different to the IHD in that they could only present historical data, up to a day before the current date.

³⁴ This remaining 30% includes the 20% who said their IHD was unplugged and 10% of IHD owners who said they do not look at how much energy they are consuming on their IHD, despite it being plugged in.

The use of this feature was low amongst credit respondents that had an app (9% at least weekly), but far more likely amongst prepay respondents (48% at least weekly). The qualitative research suggested that this was because they were already using the app to top-up and monitor their balance. They were effectively using their app as a 'one-stop-shop'.

This importance of this is that, because these customers were already using their app for an 'essential' purpose, they were more likely to be making use of the other features. Given the high usage of apps across the prepay customers in the Follow-up survey, existing apps could be a promising vehicle for delivering future support or services to prepay customers.

A majority of respondents reported an improved understanding of their own energy consumption behaviour and stated that their smart meter had changed the way they use energy.

Almost half (47%) of Follow-up survey respondents said their smart meter had helped improve their understanding of their energy consumption over the year.

Additionally, more than six in ten (62%) felt that having a smart meter had made a difference in some way to how they use energy in their home.

Effective guidance and support during and after installation are essential to enable consumers to realise benefits

Receipt of high-quality advice during the installation was routinely associated with positive outcomes, including overall satisfaction and IHD engagement, which in turn was associated with improved understanding of consumption and changes to household behaviours. When qualitative interview participants felt they had not been provided enough guidance, this complaint was almost always regarding the face-to-face interaction with the installer. This emphasises the importance of effective face-to-face engagement.

Although the vast majority of customers in this research had positive experiences, that was not the case for all, with around one in ten reporting dissatisfaction with their smart meter.

A feeling that the guidance and support provided was ineffective, either because it was limited or not felt to be useful, was a common theme in reasons for dissatisfaction or limited impact throughout this study. This referred to both demonstrations of IHDs (and apps where relevant) and energy saving advice.

Prepay participants seemed particularly sensitive to poor quality or limited guidance. Although generally more satisfied with their smart meter than credit respondents, prepay respondents were slightly less likely to say they were satisfied with the installation. The experience of one interview participant in this study highlights the especially negative

impact a lack of guidance can have on prepay customers, with this participant feeling worse off with a smart meter than a traditional meter as a result.³⁵ Prepay customers require a higher 'minimum standard' of information than credit customers because they need a thorough understanding of how to use their smart meter to keep their meter in credit. They were therefore more likely to be critical of limited or poor-quality guidance because they recognised it as insufficient for their needs.

Follow-up contact was also commonly associated with positive outcomes, and there was still an appetite for information about how to reduce consumption amongst many survey respondents after a year with a smart meter. In addition, some qualitative interview participants, including those in more vulnerable circumstances, felt that follow-up contact would help address gaps in their knowledge left by poor guidance during installation. These findings suggest that follow-up contact could be a useful tool for helping more customers get the most out of their smart meter.

Effective advice and guidance is necessary but not always 'sufficient'

Although a lack of advice and guidance was often associated with a lack of impact, it is important to note that there were also other common reasons. For example, IHD aesthetics were sometimes cited, as were the limitations in the depth of information provided by IHDs, with some feeling that appliance-level consumption would have been more actionable and an improvement which would have encouraged them to make more use of it.

Some also felt that they were doing all they could to save energy. To the researchers, it was clear that some interview participants were underestimating their ability to do so, and guidance or support could help. However, for others it reflected a lack of interest or motivation.

This study indicates that a range of factors - including (but not limited to) the provision of effective support for all consumers - need to be considered in seeking to maximising the positive impacts of smart meters.

³⁵ See pages 76-77 for the case study on this participant.



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