



Department  
of Energy &  
Climate Change

# Quantitative Research into Public Awareness, Attitudes, and Experience of Smart Meters: Wave 4

Technical report

Research conducted by Ipsos MORI for DECC

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# Quantitative Research into Public Awareness, Attitudes, and Experience of Smart Meters (Wave 4): Technical Report

## Background

DECC commissioned Ipsos MORI to undertake research to measure the public's views on smart meters and in-home displays (IHDs). The study comprised four biannual nationally representative surveys, conducted face-to-face in homes across Great Britain.

Four waves have been completed: Wave 1 in April 2012, Wave 2 in October 2012, Wave 3 in April/May 2013 and Wave 4 in September/October 2013.

This technical note is intended to accompany the summary results for Wave 4 published on [www.gov.uk](http://www.gov.uk).

Underlying data from all four waves of the survey, including demographic and other grouping variables, will be published later this year.

## Methodology

All four survey waves have been conducted on Ipsos MORI's weekly omnibus, Capibus, which is conducted in-home using face-to-face interviewers. Wave 1 comprised 2,396 interviews, Wave 2 comprised 2,159 interviews, Wave 3 comprised 2,210 and Wave 4 comprised 2,333 interviews. The respondents were all adults who were at least jointly responsible for paying their household energy bills. Data were weighted to provide nationally and regionally representative results by:

- age (by gender);
- working status (by gender);
- region (by gender);
- social grade (by gender);
- household tenure; and
- ethnicity within region.

Before Wave 1, Ipsos MORI drafted an initial questionnaire for piloting which was agreed with DECC. A cognitive pilot was then completed with 15 respondents who were at least jointly responsible for paying their household energy bills. The purpose of the cognitive pilot was to ensure that respondents were able to interpret the questions correctly and provide meaningful responses. Following the pilot a number of revisions were made to the questionnaire before it was signed off for use in the field.

After reviewing responses to Wave 1, Ipsos MORI and DECC agreed a number of question amendments for Wave 2, detailed below:

- 1) Additional pre-codes were added to certain questions including:
  - i. Source of awareness of smart meters (QAW3);
  - ii. Disadvantages of smart meters (QUN3);
- 2) An additional statement was raised about the use of gas IHDs (QIHD3); and

- 3) An open-ended question on information needs around smart meters was changed to a spontaneous pre-coded question using responses from Wave 1 (QKN1).

Some additional questions and amendments were included for Wave 3, as follows:

- Two updated pictures of smart meters were shown in place of the picture shown in Waves 1 and 2 to provide a more accurate reflection of the type of smart meters that are now currently being installed in Great Britain (QAW1);
- An additional open-ended question was added for a single wave (Wave 3) to help understand the nature of concerns of any respondents who spontaneously mentioned a health related disadvantage in connection to smart meters (QUN3a);
- Two additional questions were added to probe why bill-payers were or were not interested in having a smart meter installed in the near future (QUN4a and QUN4b);
- Three attitudinal statements were added about energy use at home for analysis purposes (QENER1-3); and
- Two new demographic questions were added - property type and property size (number of rooms in the property) (QACC and QROOM).

More information about the omnibus survey, Capibus, can be found below.

## Conducting the fieldwork

### How Are People Selected?

Capibus provides a high quality sample of respondents representative of the population at a national and regional level. (Respondents for all four waves of the smart meters survey were aged 18+ and at least jointly responsible for paying their household energy bills to ensure that the survey findings reflected the views of adult energy bill payers). Capibus uses a two stage random location design to select respondents to take part in the weekly survey. The two stages are as follows:

#### **i) Stage One - Selection of Primary Sampling Units**

All local authority areas are stratified (or grouped) into regions to ensure full geographic coverage. A total of 154-180 Local Area Authorities are randomly selected from the stratified groupings with probability of selection proportional to size. This ensures that the most populated areas in Great Britain are represented in the sample.

#### **ii) Stage Two - Selection of Secondary Sampling Units**

The second stage of sampling happens every week on Capibus. At this stage, two double output areas (DOAs) are randomly selected from each Local Area Authority; this then becomes the secondary sampling unit.

An Output Area (OA) is a very small area made up of between 60 to 100 addresses; it is the smallest area at which Census data is available. Using *Double* Output Areas (DOAs) means that there are sufficient addresses for efficient sampling and interviewing. Although we could just choose 154-180 DOAs each week completely at random and set interviewer quotas for sex, age, working status and social grade - a common approach for ensuring a sample is nationally representative - the CACI ACORN geo-demographic system is used in the selection process instead.

Adopting this approach helps to eliminate potential bias in the sample caused by interviewing an over-representative proportion of people with the same background. Using CACI ACORN allows for the selection of OA's with differing profiles such that we can be sure we are interviewing a broad cross-section of the public; since clearly even people of the same age and working status may have a different viewpoint depending on their socio-demographic background.

### **The Interviewing Process**

The Capibus questionnaire is downloaded onto each interviewer's laptop computer. The computer controls which questions are asked, depending on the respondent's particular circumstances, and will rephrase questions to respond to previous answers. This makes the questionnaire 'intelligent' allowing the interviewing process to be more interactive; in turn this allows for more complex questionnaire design and provides more accurate and insightful research findings.

### **Reporting the findings**

The separate summary note presents the findings from the fourth wave of the study. Please refer to the Excel tables for a full comparison of Wave 4 findings with the three previous waves.

Findings from any survey have a confidence interval, or margin of error, when a sample of the population is interviewed, as opposed to the entire population (a census). Approximate confidence intervals for various sample sizes related to this survey are shown in the table below. The summary note only highlights any differences between waves where they are statistically significant, taking account of their confidence intervals. Any differences quoted within the summary note are significant at the 95% confidence level.

Where figures do not sum to 100%, this is due to rounding or multiple response answers and an asterisk (\*) denotes a figure less than 0.5% but greater than zero.

### **Accuracy of reported differences between waves (statistical reliability)**

The confidence intervals, or margins of error, that apply to the percentage results in the summary note are given in the table below. This table shows the possible variation that might be anticipated because a sample, rather than the entire population, was interviewed. These confidence intervals allow us to be sure that results for different groups are statistically different.

As indicated, confidence intervals vary with the size of the sample and the size of the percentage results. The confidence interval is widest at a finding of 50% and narrows the nearer we get to absolutes of 0 or 100%. This table shows the confidence interval at the 95% level, which means that with repeated sampling, 95% of the time the result will lie within the margin of error given by the confidence interval.

Strictly speaking, the margins of error shown here apply only to random samples; in practice good quality quota sampling has been found to be as accurate. Care has been taken to ensure that the quotas set in each sampling point reflect the actual population, and that the interviews conducted match these quotas. Due to the robustness of the quota sampling applied to this research, we assume that the margins of error hold.

**Table 1: 95% Confidence Intervals (individual results)**

	<b>10% or 90%</b>	<b>30% or 70%</b>	<b>50%</b>
<i>Approximate size of sample on which survey results are based</i>	±	±	±
2,333 (bill-payers aged 18+)	1.2	1.9	2.0

*Source: Ipsos MORI*

Tolerances are also involved in the comparison of results from different parts of the sample, or of results from different waves of the survey. A difference, in other words, must be of at least a certain size to be considered statistically significant. The following table is a guide to the sampling tolerances applicable to comparisons.

**Table 2: 95% Confidence Intervals (comparing sub-groups)**

	<b>10% or 90%</b>	<b>30% or 70%</b>	<b>50%</b>
<i>Approximate size of sample on which survey results are based</i>	±	±	±
2,000 on 2,000	1.9	2.8	3.1
1,000 on 1,000	2.6	4.0	4.4
500 on 500	3.7	5.7	6.2
150 on 150	6.8	10.4	11.4

*Source: Ipsos MORI*

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