Ofgem Flexibility and Net Zero (FANZ) Survey

Technical report
May 2026

Contents

1 Introduction

1.1 Context and objectives

Ofgem's Flexibility and Net Zero Survey (FANZ), commissioned in February 2025, aims to build the evidence base on domestic energy consumers' attitudes, behaviours and experiences in relation to low carbon and flexibility products and services in the energy market in Great Britain. The project will achieve this by measuring and tracking domestic GB energy consumers', behaviours, attitudes and experiences over time.

The research project set out to answer the following research question:

To what extent are domestic energy consumers in Great Britain able to contribute towards low carbon and flexible energy consumption targets?

This question is broken down into three sub-questions:

1. What are consumers' current perceptions and attitudes towards low carbon and flexibility products and services?

2. To what extent are consumers willing and able to use their EV chargers, washing machines, and heat pumps at off-peak times (where they have each technology)?

3. How much potential flexible energy are consumers willing and able to contribute at present?

By answering these questions, the project will equip Ofgem to better protect consumers in need of support and incentivise those who can engage with such products and services to do so effectively.

1.2 Overview of approach

The first wave of the FANZ survey was carried out via Ipsos KnowledgePanel – a random probability online panel of 30,000+ individuals where panellists are recruited via high-quality address-based sampling, selected at random. This means that every household has a known chance of being selected to join the panel; improving the statistical reliability of the data. The panel also covers digitally excluded groups, achieved by providing members of the public without internet access with a tablet, basic internet access and training to enable them to complete surveys.

Ipsos developed survey questions in collaboration with Ofgem. Cognitive testing of the questions was carried out in May 2025 to ensure the questions were clearly worded and easy-to-understand for the wider target audience. Cognitive interviews were carried out with 12 individuals, recruited based on quotas to ensure a range of possible participants (in terms of age, gender, region, social grade, vulnerability and use of technologies of interest) and that the key questions could be tested.

Fieldwork was carried out during 19th - 25th June 2025. An overall sample of 4,385 domestic energy consumers in GB was achieved with boosts for lower-incidence groups (EV users and energy inefficient households, heat pump users and digitally excluded and offline consumers) to achieve sufficient sample sizes for low-incidence subgroups of interest.

The achieved samples were weighted to correct any sample imbalances using the latest GB population statistics.

After survey completion, 1,133 respondents consented to sharing up to 13 months of historical smart meter data on energy consumption and linking it to survey responses. This complemented the survey data to provide a more holistic picture of how different groups of consumers use energy and the implications for their potential to contribute flexibility. A two-stage consent process, involving Ipsos and their partner N3rgy (a data service provider), ensured data privacy and security.

2 Questionnaire design

2.1 Questionnaire design phase step-by-step

As the questionnaire covered a number of new and complex topics, an extensive development period was required.

The COM-B behavioural science framework was used across the questionnaire development process to help structure understanding of the barriers and enablers to adopting low carbon and flexibility products and services, and to identify opportunity areas for intervention to target based on the survey findings.

The questionnaire development phase ran from February to June 2025 and included the following steps:

1. **Inception and scoping phase.**
   The initial inception and scoping phase began with the kick-off meeting to explore the survey's focus and ensure the expectations of the Ipsos and Ofgem teams were aligned. The meeting covered the broad research objectives, areas of priority for the survey and to agree the behaviour change framework (COM-B). COM-B framework was mainly used to structure survey questions and ensure coverage when understanding barriers and motivators. The Ofgem team shared internal discussions, topic long-lists and stakeholder priorities as a starting point for the Ipsos team to develop workshop materials. A range of other survey questionnaires were suggested by the Ipsos and Ofgem teams, and these were reviewed in advance of the questionnaire development workshop, where suggestions for questionnaire coverage were discussed.

2. **Questionnaire development workshop.**
   Following this, a questionnaire design workshop was held with Ofgem stakeholders from relevant teams and policy areas to discuss key topic areas and refine priorities for the questionnaire and develop potential questions. The possible segmentation was also discussed. Ofgem had expressed interest in a model which would map consumers based on a range of enablers and barriers in engaging with energy demand flexibility services. The discussion covered expectations for the segmentation (later referred to as 'typology').

3. **Initial questionnaire drafting.**
   Following the questionnaire design workshop, Ipsos began to develop a draft questionnaire based on workshop discussions. This was shared with Ofgem and multiple rounds of revisions were made to it.

4. **Typology approach design.**

Alongside questionnaire development, Ipsos and Ofgem continued discussing options for a possible segmentation approach. It was agreed that given the questionnaire structure, a rules-based typology approach (a classification system where consumers would be classified based on their reported use and barriers to use of technologies of interest) would be better suited for the survey. It also aligned with the broad groups or typologies which Ofgem had identified as being of interest. The approach is described in more detail in section 4.2.

5. Cognitive testing.

Cognitive testing was included to ensure that participants interpreted the questions as intended. The fieldwork took place during 16th–21st May 2025. Recruitment was carried out by specialist recruitment agency Criteria on Ipsos' behalf. A screening questionnaire was developed which included quotas on age, gender, nation/region, social grade, vulnerability (financially vulnerable, long-term illness or chronic condition, digital exclusion) and ownership of energy technologies (EVs, heat pumps, flexible energy tariff, smart appliance) to ensure a range of participants was included and all questions could be tested. Altogether 12 cognitive participants were recruited and interviewed.

Interviews lasted for 45-60 minutes and were conducted via video calls. Upon completion, Ipsos produced an Excel cognitive testing report which showed aggregated participant responses, feedback and recommendations for the questionnaire. A marked-up questionnaire was also delivered for Ofgem's review.

6. Final questionnaire drafting.

The questionnaire was then revised as per the findings of the cognitive testing exercise and shared with Ofgem for a final round of feedback and revisions. Once a near-final draft was agreed, Ipsos's Polls for Publications team reviewed a selection of the questions to ensure they would withstand external scrutiny. The questionnaire was then signed off for fieldwork.

2.2 Questionnaire content

The final FANZ questionnaire was structured as follows:

1. Demographics

- Q1: Asks about the energy supply type in the household.
- Q2: Responsibility for household energy bills and energy supplier decisions.
- Q3: Assesses household heating methods, covering various heating sources.
- Q4a–Q4c: Whether gas/electricity are with the same supplier and how bills are paid.
- Q5a-c: Energy supplier details.

2. Attitudes towards low-carbon and flexibility products and services

- Q6: Asks about agreement with attitudinal statements on trying new products and reducing carbon emissions.

- Q8: Questions regarding current use of energy-related products (EVs, solar panels, home batteries, heat pumps, washing machines, storage heaters, and smart heating controls).
- Q7: For non-owned technologies, asks about reasons for not having one such as cost or suitability.
- Q9: Whether has a smart meter (or would consider getting one).
- Q10a-b: Whether household pays different rates depending on time of day/week and type of time of use tariff.
- Q12: Comfort with a company managing heating and EV charging (or hypothetical EV) within user conditions.
- APP0–APP5: washing machine use frequency, times of use, delay/smart features, willingness to shift to off-peak under system and money savings framings, and reasons for not shifting.

3. Electric vehicle questions

- EV1: Asks about likelihood of getting an EV.
- EV2: Explores perceived barriers for not owning an EV.
- EV3: EV-related knowledge/feasibility statements.
- EV4–EV5a–EV5b–EV5c: Asks on where/how charging is done and overriding smart settings.
- EV6a–EV6c, EV7: Asks about charging frequency, times, willingness to shift, and reasons not shifting.

4. Heat pump questions

- HP1: Asks about likelihood of installing a heat pump.
- HP2: Examines reasons for not having a heat pump.
- HP4 - HP7: Ask about use patterns and willingness to shift use to off-peak times to save money.

5. Time of Use tariff questions

- TOU1: Assesses likelihood of switching to Time of Use tariffs.
- TOU2: Asks about motivations or deterrents for engaging with these tariffs.
- TOU3: Evaluates perceptions of savings through Time of Use tariffs.

6. Closing demographics

- Q14 - Q16: Ask about financial management of bills and medical needs requiring energy consumption.

The full questionnaire has been included in Annex A.

3 Fieldwork and data processing

The fieldwork was carried out via Ipsos KnowledgePanel - a random probability survey panel. Therefore, the KnowledgePanel does not use a quota approach when building samples and conducting surveys. Instead, invited samples are stratified to account for any profile skews within the panel.

Panellists are recruited via a random probability unclustered address-based sampling method. This means that every household in the UK has a known chance of being selected to join the panel. Letters are sent to randomly selected addresses in the UK (using the Postcode Address File) inviting them to become members of the panel. Invited members can sign up to the panel by completing a short online questionnaire or by returning a paper form. Members of the public who are digitally excluded can register to the KnowledgePanel either by post or by telephone, and are given a tablet, an email address, and basic internet access which allows them to complete surveys online.

3.1 Sampling

The total sample comprised of two elements:

1. Firstly, the 'main' sample – a nationally representative sample of domestic energy consumers in Great Britain, stratified by nation and education, aiming to achieve ~3,700 completed interviews. Education was used as it typically predicts survey response variation/non-response bias, and the panel is skewed toward degree-level panellists as is common across a number of random probability surveys.

2. Secondly, the 'boost' sample which sought to ensure a minimum of:

    - 100 heat pump users
    - 300 electric vehicle users
    - 300 residents of a building with an Energy Performance Certificate (EPC) of F or G
    - A minimum of 150 panellists who are considered 'digitally excluded', including those whose primary completion mode is via tablet.

Existing information held in the panel could be used for targeting the 'boost' sample. Each panellist could count towards more than one 'boost'.

A total of 8,472 individuals were invited to participate in the survey and 4,385 completed the full survey.

3.2 Fieldwork process

Design of the survey and accessibility

The survey was designed using a 'mobile-first' approach, which took into consideration the look, feel and usability of the questionnaire on a mobile device. This included a thorough review of the questionnaire length to ensure it would not over burden respondents from focusing on a small screen for a lengthy period, avoiding the use of grid style questions (instead using alternative formats which are more mobile friendly), and making questions 'finger-friendly' so that they are easy to respond to. The questionnaire was also compatible with screen reader software to help those requiring further accessibility.

Fieldwork

The questionnaire was scripted into an online survey by the Ipsos KnowledgePanel team and checked by the research team before fieldwork launch. The fieldwork ran during 19th – 25th June 2025. Participants received incentives to thank them for taking part.

Of the 8,427 individuals invited to complete the survey, 4,690 completed the screener (55% response rate). 305 were screened out as their residence didn't have mains gas nor mains electricity or they weren't responsible for their household's energy bills/choosing the energy provider. 4,385 went on to complete the survey in full (a response rate of 52%, or 54% when people who were screened out are removed from the base).

The final questionnaire took 13.24 minutes to complete in average.

The final achieved final sample consisted of 4,385 respondents, including 1,133 respondents who agreed to have their smart meter data linked. The following numbers of respondents were achieved for the boost groups.

Table 3.1: Boost groups, target and achieved samples

Boost group	Target	Achieved
Heat pumps	100	196
EVs	300	398
EPC F-G	300	294
Digitally excluded	150	211 (120 tablet users; 91 in addition with bad/poor internet ability)

It should be noted that these boost groups were included in the sample to increase the base for questions about these specific attributes or technologies. They do not aim to be representative of their respective populations, and should not be used to draw estimates of the prevalence or profiles of these wider populations.

3.3 Weighting

To ensure the survey results were as representative of the target population as possible, a weighting approach was developed and applied.

One person per household was allowed to complete this survey. To account for this and varying household sizes, a design weight was applied to correct for unequal probabilities of selection of household members.

National statistics on the size and profile of the boost groups are not available, so could not be used to provide weighting targets. To navigate this, weighting was done in two stages:

1. First, the 4,249 respondents from the main sample (excluding the boosts) were weighted to the KnowledgePanel's standard weighting specification (in short: age-gender, region, indices of multiple deprivation (IMD), education, ethnicity, and household size).

2. From this, weighted percentages for the boost components were established and then used as targets for a further run of weighting in which all respondents were weighted.

To correct for imbalances in the achieved sample, calibration weights were also applied using appropriate population statistics and the weighted survey estimates from the main sample (without boost samples). England, Wales and Scotland were weighted together.

The calibration weights were applied in two stages:

1. The first set of variables were an interlocked variable of Gender by Age (*using ONS 2022 mid-year estimates as targets*), and region (*using ONS 2022 mid-year population estimates*).

2. The second set were Indices of Multiple Deprivation (quintiles) (*ONS mid-year estimates 2022*) Education (*Annual Population Survey 2018*), Ethnicity (*APS October 2022 – September 2023*), number of adults in the household (*ONS census 2021 for England, Wales, and 2021 mid-year estimates for Scotland*), and, to correct the boosts, the proportions of heat pump owners, electric vehicle owners, EPC rating F & G and tablet users (*weighted survey estimates from the main sample*).

The below table presents the weighting profile targets:

Table 3.2: Weighting profile targets

Age & Gender				
	Man	Woman	In another way	Prefer not to say
16-24	6.6%	6.2%	0.2%	0.1%
25-34	8.3%	8.1%	0.1%	0.2%
35-44	7.6%	7.7%	0.1%	0.2%
45-54	8.1%	8.4%	0.1%	0.2%

55-64	7.3%	7.6%	0.0%	0.2%
65-74	5.9%	6.3%	0.0%	0.2%
75+	4.4%	5.9%	0.0%	0.1%

Region	
North East	4.2%
North West	11.3%
Yorkshire And The Humber	8.5%
East Midlands	7.5%
West Midlands	9.1%
East Of England	9.6%
London	13.5%
South East	14.1%
South West	8.8%
Wales	4.9%
Scotland	8.6%

IMD Quintiles	
1	20.0%
2	20.0%
3	20.0%
4	20.0%
5	20.0%

Education	
Degree level or above	29.7%
Below degree level	68.9%
Prefer not to say/Not stated	1.4%

Ethnicity	
White	85.4%
Non-White	12.1%
Don't know/Prefer not to say	2.5%

Number of adults in the household	
One adult	18.5%
Two or more adults	81.5%

Heat pump owners	
Heat pump owners	2.8%
Not heat pump owners	97.2%

Electric vehicle owners	
Electric vehicle owners	6.2%
Not electric vehicle owners	93.8%

Tablet users	
Tablet users	0.5%
Not tablet users	99.5%

Energy Performance Certificate rating F & G	
EPC rating F & G	3.0%
ABCDE bands / Don’t know / Prefer not to say	97.0%

3.4 Quality control

The KnowledgePanel is committed to ensuring the integrity and quality of both data collection and survey data. Recruitment procedures begin with a controlled sampling frame where individuals are randomly chosen from the UK's Postcode Address File (PAF). Invited participants receive a unique password to access the registration area, minimising the risk of fraudulent participants or bot

activity. Quality control is maintained through email address verification to prevent duplication and ongoing monitoring of activity levels among panellists.

A comprehensive re-engagement strategy, consisting of tailored prompts, feedback surveys, and regular email contact, is employed to maintain engagement and data quality. Continual improvement is prioritised through experiments designed to optimise response rates and sampling efficiency, with a review of all panel communications. To safeguard panel health and prevent conditioning, participation is limited to one survey invitation per week, while regular recruitment drives ensure the panel's size and representativeness remain optimal.

Rigorous cleaning and checks are conducted on the data before inclusion in outputs. This involves identifying and removing erroneous data, analysing response timings to detect speeders, and examining response patterns to address inattentive responses. This multi-faceted approach ensures high-quality, reliable data. No respondents were removed following this phase.

All data and personal information are securely stored on the Tivian platform (held on Ipsos servers in the EU). Only certain team members of the KnowledgePanel have access to this platform, which requires a two-step authentication process for logging in.

4 Analysis

4.1 Typology framework

Background and purpose

The original aim was to develop a segmentation that could be reused in future waves of this survey and in other Ofgem surveys. Ofgem wanted the segmentation to answer the following questions, across the three main technologies of interest (heat pumps, EVs, and washing machines):

- What is people's capacity and capability to contribute to flexibility?
- Who has the technology but needs convincing to flex?
- Who faces significant or structural barriers to flex?
- Who is at risk of being left behind?
- How much additional flexible energy potential can different groups contribute (in Gigawatt hours - GWhs), given some technologies (e.g., EVs) have higher value for flexibility than others?
- What is the likely mix of technologies for flexing - will some contribute more than others?

As the questionnaire was developed and Ofgem's needs were refined, it became clear that a segmentation would not serve this purpose. The reasons were:

- Too few of the relevant questions were asked of the full sample.
- The questionnaire was not focused solely on perceptions or barriers; many questions were specific to particular technologies.
- Analysing the three main technologies of interest would require six separate segmentations (ability and willingness for each), which was beyond the project's scope and budget.
- Due to the relevant questions differing by technology, combining multiple segmentations into a single measure would be difficult.

Instead, a rules-based typology approach was agreed to be a better fit with the data collected and the broad typologies Ofgem were interested in. This approach offered several benefits:

- Produces population-level estimates, giving a clearer view of how many households are willing and able to flex.

- Allows each category to be analysed against any other variables (e.g., profiling data, behaviours), as with a cluster-based segmentation.
- Provides categories that are easy to quantify, scale, and combine to create population overviews. For example, we can estimate the share of households willing and able to flex at all, or the share that are neither, and then examine their profiles and barriers to identify actions or support to encourage flexible behaviours.

The main drawback of this approach is that the full set of questions used to create each typology group will need to be asked again if the groups are to be recreated in the future (full instructions to do so are provided below). If a cluster method had been employed, it would have been possible to use discriminant or similar analytical techniques to produce a shorter set of 'golden questions' that could be reapplied in future waves or other surveys.

Typology definitions

Development of the typology was an iterative process. It started with discussions on what Ofgem needed from it. Based on those, the definitions were drafted. Once these were broadly agreed, their feasibility in the data was investigated. A workshop was then held to finalise the definitions. The detailed definitions are included in Annex B.

The key definitions drew on:

Technologies of interest

Three technologies were chosen to span maturity and energy intensity—washing machines (ubiquitous, low per-use kWh), fully electric vehicles (emerging, high kWh), and heat pumps (nascent, medium/high kWh for space heat). Each respondent was classified separately for each technology in terms of their use and behaviour. Therefore, under this approach, each respondent could be part of three different classifications.

In addition, an overarching classification was created which covers all technologies and assigned households on each of the core analytical groups (described under 'Core analytical groups on the next page) based on their highest flex potential.

Peak and off-peak energy consumption

The survey asked respondents what time of the day their household usually (as relevant) charges their EV, runs their heat pump during winter or runs the washing machine. This information was used to determine whether their use falls on peak or off-peak times for each technology they have. In this study, off-peak electricity times are defined as between 10pm and 8am or between 11am and 4pm. Peak times are defined as the opposite (8-11am and 4pm-10pm).

Willingness to shift energy use to off-peak

Following this, the users of those EVs, heat pumps and washing machines were asked what proportion of this energy use they would be willing and able to move to 'off-peak' times, to save money. In regards to washing appliances only, users were also asked what proportion of this energy use they would be willing and able to move to 'off-peak' times to reduce grid demand.

The exact question wording can be seen in the questionnaire in Annex A.

Barriers to adoption

Respondents were asked about reasons for why they have not adopted each technology. For typology development purposes, these reasons were classed as:

- **Hard barriers:** broadly defined as structural, material constraints such as cost, infrastructure, and property limitations or simply barriers that would be difficult to change; or
- **Soft barriers:** defined as more attitudinal knowledge barriers such as lack of awareness, preferences, and perceptions.

This classification is inspired by the Individual, Social and Material approach[1] to influencing behaviours, originally developed by the University of Manchester for the Scottish Government. Soft barriers are not necessarily easier to overcome than hard barriers, and they can work together to reinforce the hard barriers to behaviour change. However, where consumers only identify soft barriers to behaviour change there may be more opportunity to engage them in the short-term.

Classification framework: Consumer typology

To understand different types of consumers across these three technologies, a classification framework was applied to categorise each survey respondent based on two key dimensions:

- Their current use of these three key technologies, their current behaviours and stated willingness to shift to off-peak use, and
- Barriers to adoption for those who do not have these technologies.

Together these created the following typologies[2]:

[1] Accessed on 18 November 2025 from: https://www.gov.scot/publications/influencing-behaviours-technical-guide-ism-tool/

[2] This typology employs a hierarchical, rule-based classification system where each respondent is assigned to one mutually exclusive category per technology based on their survey responses. The classification prioritises current behaviour over stated intentions, and hard barriers over soft barriers. Unknown or ambiguous responses result in classification to "unassessed" categories to maintain analytical integrity.

Core analytical groups:

1. **Have technology and able/willing to flex** consists of households that have the relevant technology and either already use or charge during off-peak times only or use or charge at peak times but said they would be willing or able to shift more than 25% of their usage to off-peak periods.

2. **Have technology but not able/willing to flex** includes technology owners who use or charge technology during peak times and said they are unable or unwilling to shift their usage patterns, or would only consider minimal adjustments (25% or less).

3. **Do not have technology due to soft barriers** comprises households without the technology who report only soft barriers to future adoption (or don't know in the absence of hard barriers mentioned), which are broadly defined as more attitudinal knowledge barriers such as lack of awareness, preferences, and perceptions.

4. **Do not have technology due to hard barriers** consists of households without the technology who face any hard barriers to future adoption, which are broadly defined as structural, material constraints such as cost, infrastructure, and property limitations or simply barriers that would be difficult to change.

Residual groups:

5. **Have technology but willingness to flex unknown** contains technology owners whose flexibility potential cannot be determined. Their usage patterns either vary, are unknown, or they express uncertainty about their ability or willingness to shift consumption.

6. **Do not have technology and barriers unassessed** includes households whose barriers to adoption could not be evaluated because they indicated the decision was not theirs to make or they did not know their likelihood of adoption. This only applies to heat pump and EVs.

Groups 1-4 represent the core typology segments, capturing households with clearly defined relationships to each technology – either as current users with known flexibility attitudes or non-users with identifiable barriers. Groups 5 and 6 serve as residual categories for respondents whose flexibility potential or barriers could not be fully assessed either due to variable usage patterns, 'don't know' responses, or survey routing logic that bypassed key questions used in the typology classification.

The decision rules were created to be hierarchical and mutually exclusive. It was also decided that current behaviour takes precedence over stated intention; hard barriers take precedence over soft barriers.

Typology outputs

Aside from the overarching group, this rule-based algorithm assigned one segment per technology to every respondent. This means that each respondent could have ended up belonging to up to

three different typologies if they used all three technologies of interest. Internal consistency checks were carried out to make sure the typology was applied correctly. The typology framework was applied in the final data and data tables. The findings were written up in the analytical report.

4.2 Data deliverables

Following the fieldwork of the study, the following outputs were delivered:

Data tables: These were delivered in Excel format and showed the frequency counts for each question, broken down by a number of demographic and attitudinal cross-tabulations. The tables also included significance testing at the 95% confidence level, using letters to show where any differences between sub-groups are statistically significant (see below).

Cross-tabulations do not always add up to the total base size since answers such as 'don't know' and 'prefer not to say' are not included in cross-tabulations.

SPSS dataset: This was provided to allow further analysis and linking with existing datasets. An individual level datafile was provided in SPSS format, including derived variables and typology variables.

4.1 Statistical significance

Statistical significance is a measure used to determine the likelihood that the results observed in a survey are due to chance rather than a specific factor or intervention. It helps in assessing whether the patterns and differences found in the data are genuine and can be reliably used to infer conclusions about the broader population.

Where significant differences between subgroups and the total sample are identified, 'total sample' represents the total sample minus the subgroup in question.

Significance differences in reporting are calculated at the 95% confidence level. Only where a difference is statistically significant is it discussed in the analysis of the report.

In the data tables, letters are employed to highlight significant differences when comparing one subgroup to others in the tables (e.g. males vs females), or to compare subgroups against the total. These groups are identified by corresponding letters placed beneath the column headers in the cross-break section of the table. A letter underneath a percentage figure means the figure is significantly higher at 95% confidence interval than for the group denoted by the letter. The significance tests were based on the effective base size, in other words the loss of precision from weighting the survey was taken into account.

5 Smart meter data linking

5.1 Partners involved in smart meter data linking

N3rgy data service[3] was used by Ipsos to interface with the national smart meter systems to collect, store, manage and share with Ipsos the smart meter data of survey participants. N3rgy are a leading managed service provider specialising in secure access to smart meter data.

5.2 Recruitment and fieldwork

At the conclusion of the survey, respondents were presented with a consent request, authorising Ipsos to access and analyse up to 13 months of their historical smart meter data. This consent request was carefully designed to comply with the requirements of the Smart Energy Code, ensuring data privacy while minimising respondent burden.

Panellists were offered an incentive of 1000 KnowledgePanel Points (worth £10) of credit to their account as an additional thank you.

The consent process involved several steps:

1. Participants were provided sufficient detail to enable them to give informed consent and to meet legal requirements for energy data linking. They were then asked to record whether they consented to data linkage or did not.

2. Consenting participants were asked to provide their address, using a lookup tool built into the survey which verified the address and provided the address UDPRN (unique code) in the background.

3. N3gry's read-inventory API was called to retrieve the property's smart meter details based on the provided UDPRN. This step was not visible to participants.

4. If the property was found to have an active smart meter the participant was asked to provide their move-in date to the property at the address provided, this date was used to determine the valid period for smart meter linkage (up to a maximum of 13 months).

5. Participants were then asked to enter a 16-character number that uniquely identifies the their smart meter (IHD_MAC) from their in-home display, with instructions provided on where

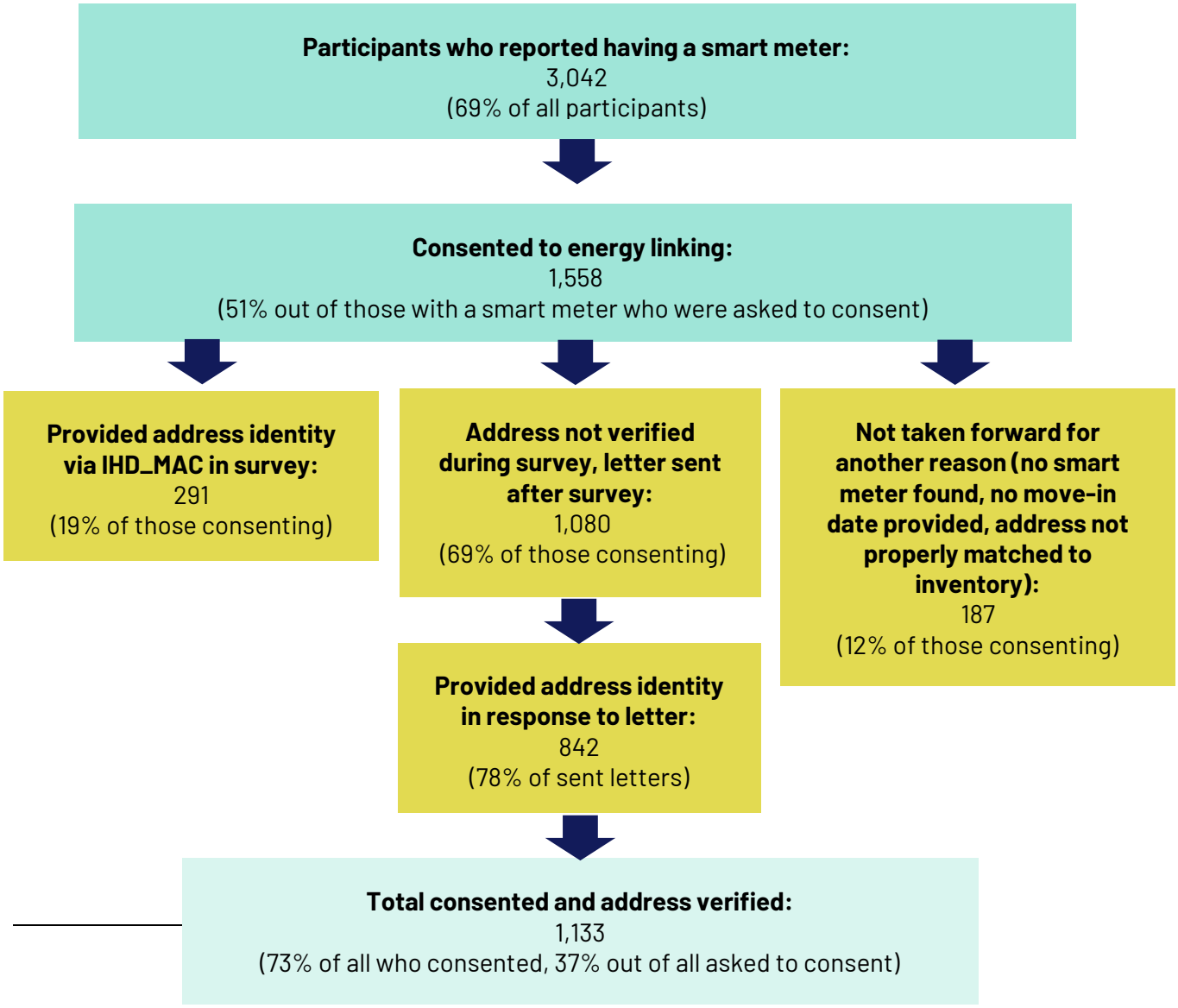
[3] https://n3rgy.com

to find it. This step is required by the Smart Energy Code[4] as an additional step to confirm that consenting individuals are at the property for which data will be provided.

6. If respondents were unable to locate their IHD_MAC, they could opt to receive a letter in the post, as an alternative option to provide proof of address permitted by the Smart Energy Code.

Following the survey, Ipsos sent letters to 1,080 participants who were not able to provide their address via IHD_MAC linking, asking them to complete the consent process (i.e. those opting for this approach at step 6 above). The letters asked participants to click on a QR code, or enter a web URL and access code, whereafter they were consented for energy linking. Ipsos also sent a reminder email in the days following the letters landing, to ask participants to check their post and sign up.

The following response outcomes applied to the energy linking:



[4] See more information here: https://smartenergycodecompany.co.uk/

5.3 Retrieving and linking survey responses to smart meter data

N3rgy shared with Ipsos the following data from participants with either a gas or electricity smart meter and who consented to data linking and verified their address:

- Electricity half-hourly consumption and export data, and gas half-hourly consumption data, for the time period since the participant had their smart meter installed or when they moved into the property (going back up to a maximum of 13 months from consent date).
- Electricity and gas tariff data (containing information on the prices charged for energy consumed), collected from the point of consent onwards. Historic tariff data was not widely available and could only be collected for individuals who had previously consented to N3rgy's data collection obtained separately from this project.
- Information identifying the energy meter (number, location, type).

Ipsos linked the energy consumption data with survey responses through a pseudonymised participant ID. This allowed Ipsos to assess differences in energy consumption based on household factors captured through the survey, for example, which technologies respondents have in the home and how they are used.

5.4 Smart meter data processing

5.4.1 Objective and overview

Ipsos and N3rgy processed half-hourly electricity consumption data to derive a clean dataset that Ipsos then used to calculate a robust, household-level peak intensity metric on flexibility potential, for those smart meter consumers who shared their consumption data. The data cleaning process focused on removing obvious errors, containing the influence of extreme values, repairing missingness in both timestamps and readings in a way that respects daily and weekly load patterns, and enforcing a minimum observation window so the resulting peak metric is stable and seasonally representative. This process is outlined in depth in the following sections of this report.

5.4.2 Data source and structure

First, a single aggregated CSV file of half-hourly smart-meter readings was ingested. The working schema retained only:

- Unique household identifier

- Timestamp (half-hourly)
- Electricity consumption per interval (kWh per 30 minutes)

Timestamps were parsed to a UTC datetime (as this is the timestamp format of N3RGY processed data).

5.4.3 Outlier detection and treatment

A two-stage approach was taken:

- Removal of obvious data-entry errors. Any interval with a value at or above 4,294,967 (which is the default error value generated by N3rgy's data collection process) was set to missing.
- Percentile-based outlier control at the household level. For each household the top 1% of energy readings were flagged as outliers. Those intervals were not discarded; they were set to missing (to be filled in subsequently with more typical estimated values). This approach was followed because it retains legitimate high-demand moments characteristic of residential behaviour while cancelling out spurious spikes that would otherwise bias the average upward.

The household "peakiness" was sense-checked by contrasting each household's maximum vs mean before and after treatment; the max-to-mean ratio stabilised after outlier control, consistent with removing spurious extremes rather than legitimate evening peaks.

5.4.4 Handling missing data

Missingness was addressed in both time and consumption values, aiming to keep legitimate peaks and day–week patterns intact:

- Timestamp repair. Within each household, missing timestamps were forward-filled by adding successive 30-minute increments from the last known timestamp. This creates a monotonic half-hour sequence where short gaps existed. The method cannot fill leading missing segments (no prior reference point), but these are rare and are handled later by filtering.
- Removal of fully missing days. For each household and calendar day, if all half-hour values were missing, the entire day was dropped. Partial days (i.e. where at least one half-hour period was missing) were retained (and imputed).
- Historical-average (HA) imputation for remaining gaps and flagged outliers. This approach respects daytime and weekly regularities in residential load. It is more appropriate for peak-oriented analysis than simple linear interpolation, which tends to dampen peaks. This is because it replaces gaps using a household's own temporal signature (time-of-week, nearby season), better preserving peak structure than other imputation methods. Where no

historical readings existed, the value remained missing. Pattern-matching imputation was used that borrows from a household's own historical readings:

- A day-of-year window of ±8 days to capture proximate seasonal conditions.
- A "within-week" timing tolerance of about ±1 hour, implemented by mapping each timestamp to a Monday=1, Sunday=7 scale with a fractional day component and selecting neighbours within that narrow window.
- For each missing interval, the mean of all available historical intervals was imputed that lie within these day-of-year and within-week tolerances.

5.4.5 Eligibility filter: minimum observation window

To ensure seasonal coverage and a stable estimate of typical peak use, the final sample was restricted to households with more than three months of half-hourly data (over 4,320 observations). Peak behaviour is seasonal and heterogeneous; three months gives sufficient observations across weekdays and weekends to stabilise an average daily peak figure. This reduces the risk that the peak metric is dominated by short-lived behaviour.

5.4.6 Construction of peak intensity

"Peak intensity" was operationalised as each household's average daily energy consumed during nationally relevant peak windows:

- Morning peak: 08:00 to 11:00 (exclusive of 11:00)
- Evening peak: 16:00 to 22:00 (exclusive of 22:00)

Timestamps were formatted to accommodate British Summer Time changes to accurately capture "true" peak hour periods. The computation for constructing peak intensity was as follows:

- For every interval, it was flagged whether its time-of-day falls within the morning or evening peak windows.
- For each household-day with data, kWh was summed across all intervals to obtain total daily consumption and separately summed only the intervals within the peak windows to obtain peak daily consumption.
- At the household level, we aggregated across the observed days:
  - Observed days: the count of days with data after cleaning/imputation.
  - Total peak kWh: the sum of peak-window kWh over all observed days.

  - Peak intensity (our final metric): total peak kWh divided by observed days, i.e., the household's typical daily energy consumption in peak hours (kWh/day within 08:00–11:00 and 16:00–22:00).

This choice of averaging across days provides an estimate of how much energy a household typically uses during peak windows. Because the base unit is kWh, the metric is directly comparable across homes and lends itself to estimating potential flexible load (e.g., what fraction might shift out of peak).

5.4.7 Reproducibility and parameters (for transparency)

- Outlier sentinel threshold: ≥ 4,294,967 kWh per half-hour set to missing.
- Percentile filter: household-specific 99th percentile cap; flagged intervals treated as missing then imputed.
- Timestamp repair: forward-fill at +30 minutes within household sequences.
- HA imputation windows: ±8 days-of-year; ±~1 hour within the week's timeline; mean of historical matches.
- Eligibility: > 4,320 half-hour intervals (approx. 3 months).
- Peak windows: 08:00–11:00 and 16:00–22:00 local wall-clock.

5.5 Flexibility potential analysis

This section sets out a methodology for scoring households' additional flexibility energy potential based on consumption patterns, self-reported flexibility potential, and ownership/use of three key technologies of interest (EV smart chargers, heat pumps and laundry appliances). The score combines two components to balance survey-based estimates of shiftable energy with information from observed peak demand. Specifically, the final "flexibility potential" score is a weighted average of:

1. the estimated household total amount of energy that could be shifted from peak to off-peak hours (kWh/year) using survey data and technology usage assumptions; and
2. total household peak intensity (kWh/day), derived from metered consumption.

Below the core definitions are provided (applied consistently across the analysis):

- Peak hours: the designated peak window used in this study (as defined for the programme and applied consistently across households).
- Off-peak hours: all non-peak periods within the same day.

- Peak intensity: the average amount of electricity consumed during peak hours per observed day (kWh/day).
- Technologies of interest: the set of technologies covered by the survey and subsequent estimation sections (EV chargers, heat pumps, and washing machines).

5.5.1 Analytical approach to estimation

Estimating implied shiftable energy (kWh/year)

To estimate the total amount of energy that could be shifted from peak to off-peak hours at the household level, survey responses were combined with appliance/technology consumption assumptions. The logic is:

- For each relevant technology of interest (washing machines, fully electric vehicles and heat pumps), estimate total usage over the period (e.g., cycles, charging hours) and the associated electricity consumption (kWh), using the assumed kWh per use.
- Estimate the proportion of that usage occurring during peak hours to obtain the total kWh used during peak.
- Apply the respondent's survey response on the proportion of that peak usage they could shift to off-peak.
- Sum across the technologies of interest to obtain the household's implied amount of flexibility per year (kWh).

Assumptions on appliance usage factors and kWh per use are documented in the subsequent technology of interest estimation sections. This approach yields a household-level estimate of shiftable energy that reflects both the presence and use of each technology and the self-reported ability to shift their operation to off-peak times.

Estimating peak intensity (kWh/day)

Total household peak intensity is calculated using metered energy consumption data:

- For each observed day with valid data, electricity consumption is summed within the peak window to obtain daily peak consumption (kWh/day).
- This is then averaged across all observed days for that household to derive peak intensity (kWh/day).

This normalises for differences in data availability across households: for example, households with shorter observation periods can still be compared on a consistent basis. The rationale for including peak intensity is that households with higher average demand during peak hours represent a larger pool of potential flexibility; those with very low daily peak consumption can offer

little flexibility, while those with higher daily peak consumption could offer significant flexibility if they choose to shift usage.

Standardisation and weighting

Each household/respondent obtains two measures:

- Implied amount of flexibility per year (kWh/year).
- Peak intensity (kWh/day).

Prior to aggregation, we standardise (z-score) these two measures across the analytical sample to place them on a common, dimensionless scale and to reduce the influence of extreme values. The final flexibility potential score is a weighted average of the two standardised measures using a 75%:25% weighting scheme (implied amount of flexibility: total consumption during peak hours). This weighting methodology can be justified by considering the relative significance and influence of the two factors in determining flexibility. The willingness to shift energy use indicates a more actionable behaviour than mere high consumption rates, particularly if consumption is also driven by non-shiftable demands such as essential appliances (fridge/freezer, lights, etc.) or household size. By weighting the implied shiftable kWh more heavily, the scoring emphasises proactive consumer engagement rather than current consumption patterns which may not necessarily translate into flexibility due to fixed or essential energy uses.

Segmentation for reporting

Following construction of the flexibility potential score, households were ranked by this score and survey weights were applied when dividing the population into population-based quartile bands before providing summary statistics on the implied flexibility potential within each segment. In practice, this creates four ordered groups of flexibility potential for comparative analysis.

Key assumptions and limitations

- Scope of flexibility: The implied amount of flexibility reflects the technologies of interest categories and associated usage assumptions.
- Self-reported responses: Survey responses on usage and shiftable proportions may be subject to recall or optimism bias. They indicate potential rather than guaranteed measured flexibility.
- Parameters for each technology of interest: kWh per use and usage factors are assumed values; deviations from actual device efficiency or behaviour will affect estimates.
- Data availability: Not all households have complete metered data or complete survey responses.

- Interpretation: The final score is a relative indicator of flexibility potential, not a firm capacity rating.

5.5.2 Implied flexibility calculations for each technology of interest – Assumptions, data and methodologies

Below we outline the core assumptions, survey questions and methodology for each of the technologies of interest in scope of this analysis (washing machines, fully electric vehicles and heat pumps).

Washing machine

Assumptions

- A typical wash cycle consumes 1.5 kWh and lasts approximately 1 hour. This implies an average cycle power of around 1.5 kW (consistent with the survey wording).
- Peak hours are defined as 08:00–11:00 and 16:00–22:00 (local time), applied consistently across all respondents.

Survey inputs

- QAPP0 (usage frequency): number of washing machine cycles per week. Where responses are provided as ranges (e.g., 4–6 per week), we convert to a point estimate using the lower bound as a conservative approach.
- QAPP1 (time-of-use): the time blocks (presented as either 2 or 3-hour windows in the survey) during which the washing machine is typically used. We compute the share of use in peak by:
  - summing the total number of hours across all selected time blocks;
  - summing the number of hours within those selected blocks that fall inside the defined peak windows; and
  - dividing peak hours by total selected hours to obtain the peak share.

  This approach accounts for blocks that are wholly off-peak (e.g., 22:00–01:00) and for different block lengths.
- QAPP3 (shiftability): the proportion of peak-time washes the respondent states they could shift to off-peak. Where categorical ranges are used (e.g., "most of them (50–75%)"), we map to the lower bound of the range for a conservative estimate.

"It varies" and "Don't know" responses to APP0, APP1 and APP3 are treated as missing and therefore dropped from the analysis.

Table 5.1: Figures used in calculating the number of washes per week

Question APP0 response	Number of washes per week used in calculation
More than once a day	7
Once a day	7
4-6 times per week	4
2-3 times per week	2
Once a week	1
Less than once a week	1
Never	0

Table 5.2: Figures used in calculating the number of washes during peak hours willing to shift

Question APP3 response	Percentage of washes willing to shift
All of them (100%)	100%
Almost all of them (more than 75%)	75%
Most of them (about 50-75%)	50%
Some of them (more than 25%, but less than 50%)	25%
A few of them (less than 25%)	25%
None of them	0%

Example

- QAPP0: "4–6 washes/week" are coded as 4 washes/week (lower bound).
- QAPP1: respondent selects 06:00–08:00 (off-peak), 08:00–11:00 (peak), and 22:00–01:00 (off-peak). Total selected hours = 2 + 3 + 3 = 8 hours; peak hours within these = 3 hours (08:00–11:00). Peak share = 3/8 = 37.5%.
- QAPP3: "most of them (50–75%)" are coded as 50%.
- Implied annual flexibility = 4 × 1.5 × 0.375 × 0.5 × 52 = 58.5 kWh per year.

Electric vehicles

Assumptions

- Battery capacity: 55 kWh.
- Average energy added per charging session: 56% of battery capacity, equivalent to 30.8 kWh per charge. This parameter reflects the charge target taken from Ipsos EV Driver Tracker Y1 findings which suggests that when plugging in to charge, the average battery level was 44%.
- Home charging rates:
  - Dedicated at-home charger: 7 kW.
  - Mains (3-pin) charger: 2.5 kW.
- Time needed to deliver 30.8 kWh:

  - 7 kW charger: 4.4 hours (30.8/7).
  - 2.5 kW charger: 12.32 hours (30.8/2.5).
- Peak hours are defined as 08:00–11:00 and 16:00–22:00 (local time), applied consistently across all respondents.

Survey inputs

- EV6a (charging frequency): number of at-home charging sessions per month. Where the response is a range (e.g., "4 or more"), we code to the lower bound for a conservative point estimate (e.g., 4).
- EV6b (time-of-use): the time blocks (presented as either 2 or 3-hour windows in the survey) during which the EV is typically charged. We compute the share of charging that occurs in peak by:
  - summing the number of hours within all selected charging blocks that fall inside the defined peak windows (peak hours);
  - summing the total number of hours across all selected charging blocks (total hours); and
  - dividing peak hours by total hours to obtain the peak share.

  This assumes charging activity is uniformly distributed across any selected blocks.
- EV4 (charger type): type of at-home charger, where "at home, using private electric charging point" is coded as 7kW charge capacity, while "at home, using the electricity mains" is coded as 2.5kW charge capacity.
- EV6c (shiftability): the proportion of peak-time charging the respondent states they could shift to off-peak. We map the categorical response to a numerical fraction using a pre-defined category-to-point mapping. In the worked example below, "a few of the hours (less than 25%)" is coded as 25%.

"Don't know" and "It varies" responses to EV6a, EV6b, EV4 and EV6c were treated as missing and therefore dropped from the analysis. Households which charge their vehicle away from home were deemed to have no implied flexibility potential as this analysis focused on domestic electricity flexibility.

Table 5.3: Figures used in calculating the number of charges per month

Question EV6a response	Number of charges per month used in calculation
4 times a month or more	4
2-3 times a month	2
Once a month	1

Less than once a month	1
Never	0

Table 5.4: Figures used in calculating the number of charge hours willing to shift

Question EV6c response	Percentage of charging hours willing to shift
All of them (100%)	100%
Almost all of them (more than 75%)	75%
Most of them (about 50-75%)	50%
Some of them (more than 25%, but less than 50%)	25%
A few of them (less than 25%)	25%
None of them	0%

Example

- EV6a: "four or more" charges/month are coded as 4 charges/month (lower bound).
- EV6b: respondent selects 01:00–04:00 (3 h), 04:00–06:00 (2 h), 06:00–08:00 (2 h), and 08:00–11:00 (3 h). Total selected hours = 10; peak hours within these = 3 (08:00–11:00). Peak share = 3/10 = 0.30.
- EV6c: "a few of the hours (less than 25%)" are coded as 0.25.
- EV4: dedicated at-home (7 kW). Per-charge energy = 7 kW × 4.4 h = 30.8 kWh.
- Implied annual flexibility = 4 × 30.8 × 0.30 × 0.25 × 12 = 110.8 kWh per year.

Heat pumps

Assumptions:

- Average consumption while actively heating: 0.38 kWh per hour (i.e., an average load of ~0.38 kW).[5]
- Winter season length: 215 days, reflecting the approximate length of the UK heating season (typically October to April) during which space heating demand is present. For weekly usage inputs, we apply a seasonal scaling factor of 215/365 = 0.589 to restrict implied flexibility to the winter period.
- Peak hours are defined as 08:00–11:00 and 16:00–22:00 (local time), applied consistently across all respondents.

[5] The estimate of the average consumption of a heat pump used here is different from the estimate used in the questionnaire, as it was revised following recent findings from the Centre for Net Zero's research project: https://www.centrefornetzero.org/papers/decarbonising-heat-the-impact-of-heat-pumps-and-a-time-of-use-heat-pump-tariff-on-energy-demand

Survey inputs

- HP4: whether the household leaves the heat pump on all day. For those who indicate they leave the heat pump on all day (HP=1), our assumption on availability is the device operates during all peak hours (9 hours/day) in winter
- HP5a: for those not leaving the heat pump on all day (HP4 ≠ 1), how often the heat pump is run to heat the home (times per week).
- HP6: up to 4 hours, how many hours the respondent would be willing to shift from peak to off-peak.

Table 5.5: Figures used in calculating the number of heating during peak hours willing to shift

Question HP6 response	Number of heating during peak hours willing to shift
Stop using heat pump to warm the home during all 4 peak time hours	4 hours
Use heat pump to warm the home for only 3 of those 4 hours	3 hours
Use heat pump to warm the home for only 2 of those 4 hours	2 hours
Use heat pump to warm the home for only 1 of those 4 hours	1 hour

Table 5.6: Figures used in calculating the number of charge hours willing to shift

Question HP5a response	Number of days that heat pump is used to heat home per week used in calculation
More than once a day	7
Once a day	7
4-6 times per week	4
2-3 times per week	2
Once a week	1
Less than once a week	1
Never	0

Examples:

Heat pump is always on (HP4 = 1): A respondent is willing to stop using the heat pump during the maximum 4 peak hours per day. Implied annual flexibility: 215 × 0.38 × 4 = 326.8 kWh per year.

Heat pump not always on (HP4 ≠ 1): A respondent uses the heat pump once per week to heat the home and is willing to stop for 4 peak hours per use. Implied annual flexibility: 1 × 0.38 × 4 × 52 × (215/365) = 46.55 kWh per year.

5.5.3 Implied flexibility potential per technology of interest: GB estimates

This section details the methodology used to extrapolate the implied flexibility potential from the survey sample to a national level for Great Britain (GB). The process involves utilising household

population estimates from the most recent censuses for England, Wales, and Scotland to create a scaling factor, which is then applied to the survey's energy shifting estimates.

The first step in this analysis was to determine the implied shiftable energy (kWh/year), from the collected survey responses. The process is outlined in section 5.5.1 and was implemented to calculate the total implied shiftable energy for the entire valid sample, which consisted of 3,080 respondents after the exclusion of "don't know" or missing answers. This initial calculation provided the baseline energy flexibility potential within the surveyed population. For instance, in the case of washing machine usage, the survey data from the 3,080 respondents indicated a total flexibility potential of approximately 160,000 kWh.

To project these survey-level findings to a nationwide estimate for GB, a bottom-up scaling approach was adopted. This method assumes that the weighted survey sample is representative of the broader GB population.

The basis for this extrapolation is the total number of households in GB which was derived from the following official census data:

- England and Wales: The 2021 Census for England and Wales recorded a total of 24,782,800 households.
- Scotland: The 2022 Scotland Census recorded a total of 2,509,300 households.
- Combining these figures provides a total of 27.3 million GB households.

A scaling factor was then calculated by dividing the total number of GB households by the number of respondents in the final analysis sample (27,292,100 / 3,080 ≈ 8,861). This scaling factor represents the number of households in the wider population that each survey respondent represents. The calculated scaling factor was then applied to the survey-level estimates of shiftable energy to project the total potential for GB.

Using washing machines as an example, projected GB flexibility is calculated as the survey-based flexibility estimate multiplied by the scaling factor, i.e. 160,000 kWh x 8,831 = 1,412,960,000 kWh (roughly equivalent to 1,413 GWh). It is important to acknowledge the inherent uncertainty in such extrapolations and therefore, the final results presented in the main report are accompanied by ranges.

6 Data protection

The following protocols were followed to ensure privacy and compliance with data protection requirements.

- Informed consent was obtained from all survey respondents.
- Survey data was stored securely on Ipsos servers and any transfer of data was completed using Ipsos' secure and encrypted transfer system 'Ipsos Transfer'. Any respondent identifying information was securely and permanently deleted once it was no longer necessary to retain it for this survey.
- Personal data and other confidential data held on Ipsos' systems are stored in an encrypted format, with access limited to authorised staff by via the network settings and/or database access control policies.
- Only anonymous and aggregated data was reported on. Survey results were presented in a statistical report and no individual was identified in the published report or in the published data set.
- All members of the team have been trained to ensure a high level of data protection awareness and data protection adherence.

Annexes

Annex A. Final questionnaire

MODULE INTRO TEXT

Thank you for taking the time to participate in this survey. We would like to ask you some questions about how your household uses energy on behalf of Ofgem. Ofgem is the independent energy regulator for Great Britain.

First, we'd like to ask you a few questions about you and your household, so we can look at your answers alongside those of other people like you.

Demographics

ASK ALL
SINGLE CODE

Q1. Do you have mains gas and/or mains electricity in your household?

Please select one option only

1. Both mains gas and mains electricity
2. Mains electricity only
3. Mains gas only
4. Neither mains gas nor mains electricity [STOP interview]

99. Don't know [STOP interview]

SCREEN OUT MESSAGE:

Thank you for your interest in participating in this survey. This survey is for those people who have mains gas or electricity and responsible for the household bills.

ASK IF Q1 = 1-3 (Has mains gas or electricity supply)
SINGLE CODE

Q2. Are you responsible – individually or with another household member – for your household's energy bills and/or for choosing your household's energy supplier?

Please select one option only

1. Solely responsible
2. Jointly responsible (e.g. with a partner or housemate)
3. No responsibility, other person/people in household are responsible [STOP interview]
4. No responsibility, landlord organises and pays energy bills (e.g. included in rent) [STOP interview]

99: Don't know [STOP interview]

SCREEN OUT MESSAGE:

Thank you for your interest in participating in this survey. This survey is for those people who have mains gas or electricity and responsible for the household bills.

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)
MULTI CODE

Q3. In which of the following ways does your household heat your home?
Please select all that apply

Central heating

1. Gas
2. Oil
3. Solid fuel – coal
4. Solid fuel – biomass (for example wood)
5. Heat pump

Fixed room heaters, fires and stoves

6. Electric (storage)
7. Natural gas
8. Electric (not storage)
9. Solid fuel (open fire/enclosed stove) – coal
10. Solid fuel (open fire/enclosed stove) – wood
11. LPG (liquified petroleum gas)

Portable heaters

12. Electric
13. Other portable heater

Other

14. Communal or district heating (heat networks)
15. Something else (please specify)

99. Don't know [FIX, EXCLUSIVE]

ASK IF Q1 = 1 AND Q2 = 1-2 (Has mains gas and electricity supply and is sole or joint energy billpayer)
SINGLE CODE

Q4a. Is your household's gas and electricity supplied by the same energy supplier?

1. Yes
2. No

99. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-2 AND Q2 = 1-2 (Has mains electricity supply and is sole or joint energy billpayer)
SINGLE CODE

Q4b. How does your household pay for your <u>electricity</u>?

Please select one option only

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Monthly/quarterly direct debit (where your energy supplier takes an agreed amount from your bank account automatically)
2. Pay by cheque, cash or card on receipt of a bill from your energy supplier
3. Prepayment meter, where you top up credit on to a key or card
4. Prepayment meter, where you top up credit online or using a mobile app
5. Pay to an intermediary such as a landlord, housing manager, site owner or someone else
6. Pay in another way (please specify)

99. Don't know [FIX]

ASK IF Q1 = 1 OR 3 AND Q2 = 1-2 (Has mains gas supply and is sole or joint billpayer)
SINGLE CODE

Q4c. How does your household pay for your gas?

Please select one option only

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Monthly/quarterly direct debit (where your energy supplier takes an agreed amount from your bank account automatically)
2. Pay by cheque, cash or card on receipt of a bill from your energy supplier
3. Prepayment meter, where you top up credit on to a key or card
4. Prepayment meter, where you top up credit online or using a mobile app
5. Pay to an intermediary such as a landlord, housing manager, site owner or someone else
6. Pay in another way (please specify)

99. Don't know [FIX]

ASK IF Q1=2 OR Q4a=2 (Has mains electricity supply or has separate suppliers for mains gas and electricity)
SINGLE CODE

Q5a. Please can you tell me which company your household pays your electricity bill to?

Please select one option only

1. British Gas
2. Your Co-op Energy
3. E Gas and Electricity
4. Ecotricity
5. EDF Energy
6. E.ON Next
7. London Power
8. Octopus Energy
9. Outfox the Market
10. OVO Energy
11. Sainsbury's Energy
12. Scottish Power
13. So Energy
14. Utilita

15. Utility Warehouse
16. Other (specify)
99. Don't know

ASK IF Q1 = 3 OR Q4a = 2 (Has mains gas supply or has different suppliers for gas / electricity)
SINGLE CODE

Q5b. Please can you tell me which company your household pays your gas bill to?

Please select one option only

1. British Gas
2. Your Co-op Energy
3. E Gas and Electricity
4. Ecotricity
5. EDF Energy
6. E.ON Next
7. London Power
8. Octopus Energy
9. Outfox the Market
10. OVO Energy
11. Sainsbury's Energy
12. Scottish Power
13. So Energy
14. Utilita
15. Utility Warehouse
16. Other (specify)
99. Don't know

ASK IF Q4a = 1 OR 99 (Has same supplier for gas / electricity or doesn't know)
SINGLE CODE

Q5c. Please can you tell me which company your household pays your energy bill to?

Please select one option only

1. British Gas
2. Your Co-op Energy
3. E Gas and Electricity
4. Ecotricity
5. EDF Energy
6. E.ON Next
7. London Power
8. Octopus Energy
9. Outfox the Market
10. OVO Energy
11. Sainsbury's Energy

12. Scottish Power
13. So Energy
14. Utilita
15. Utility Warehouse
16. Other (specify)
99. Don't know

Attitudes towards low carbon and flexibility products and services

INTRODUCTION

We'd now like to ask some questions about some products or services that you may be aware of.

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)
SINGLE CODE PER STATEMENT

Q6. To what extent do you agree or disagree with the following statements?

Please select one option only per statement

RANDOMISE STATEMENTS

S1. My household is usually among the first to try a new product when it appears on the market

S2. My household wants to use products and services that help to reduce carbon emissions

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)
MULTI CODE

Q8. Which, if any, of the following products or appliances does your household currently use at home?

Please select all that apply

RANDOMISE CODES 1-7

1. A fully electric car or van (that you plug in and charge, not a hybrid)
2. Solar panels
3. Home battery storage for electricity (large battery which allows storing electricity for later use. Common brands include GiveEnergy All in One Battery, Tesla Powerwall)
4. [Q3 = NOT 5)] Heat pump (a specific type of electric home heating which extracts heat from the outside environment, such as the air or ground, and uses it to heat the home)
5. Washing machine or combined washer/dryer (any type)
6. [SHOW IF Q3 = NOT 6] Storage heaters (electric heaters that generate and store heat during the night and release the heat when needed e.g. to warm your home during the day)
7. Smart home heating controls (e.g. Hive, Google Nest) or smart thermostatic radiator valves ('TRVs'). These enable you to programme your boiler or heating system online/by smart phone

8. None of these [EXCLUSIVE]
99. Don't know [EXCLUSIVE]

Q8 DUMMY

EV OWNER = 1 IF: Q8 = 1

HEAT PUMP OWNER = 1 IF: Q3 = 5 OR Q8 = 4

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer) MULTI CODE PER STATEMENT

Q7. For which, if any, of the following reasons does your household <u>not</u> have the following technologies?

Please select all that apply

RANDOMISE STATEMENTS S1-S5

S1. Solar panels [DO NOT SHOW IF Q8=2]

S2. Home battery storage for electricity (large battery which allows storing electricity for later use. Common brands include GiveEnergy All in One Battery, Tesla Powerwall) [DO NOT SHOW IF Q8=3]

S3. Washing machine or combined washer/dryer (any type) [DO NOT SHOW IF Q8=5]

S4. Storage heaters (electric heaters that generate and store heat during the night and release the heat when needed e.g. to warm your home during the day) [DO NOT SHOW IF Q8=6]

S5. Smart heating controls or smart thermostatic radiator valves ('TRVs'). These enable you to programme your boiler or heating system online/by smart phone [DO NOT SHOW IF Q8=7]

RANDOMISE CODES 1-7

1. Costs too much to purchase and / or install
2. Not suitable for home
3. Not suitable for lifestyle / work pattern
4. Too difficult to install
5. Don't know enough about it
6. Haven't got round to it yet
7. In the process of getting this
8. Other (specify)
9. None of these
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer) SINGLE CODE

Q9. Does your household have a smart meter?

A smart meter sends your energy supplier meter readings automatically. It may also have a display device which shows you how much energy you are using in near real time.

Please select one option only

1. Yes
2. No, but I would consider getting one in future

3. No, but I am waiting for one to be installed
4. No, and I would not consider getting one in future
5. 99. Don't know

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)
SINGLE CODE

Q10a. Does your household pay different amounts for its energy depending on when you use it?

This could mean you pay less for your energy at certain times during the day or night, or at weekends.

Please select one option only

1. Yes
2. No
99. Don't know

ASK IF Q10a = 1 (Pays different amounts for energy depending on time of day / week)
SINGLE CODE

Q10b. Some suppliers offer energy tariffs that charge consumers cheaper 'off-peak' rates for their energy at times of night or day when demand is at its lowest, and higher 'peak' rates at more popular times. These are called Time of Use tariffs and include Economy 7 or Economy 10 meters.

Is your household on one of these meters or tariffs?

Please one option only

1. [SHOW IF Q9 IS NOT = 1] Yes – an Economy 7 or Economy 10 meter
2. [SHOW IF Q9 = 1] Yes – a Time of Use tariff where energy is cheaper at set times of the day or night
3. [SHOW IF Q9 = 1] Yes – a dynamic tariff where the price of energy can change at any time of the day or the night IF Q5a/b/c = 8: (e.g. Octopus Agile Tariff)
4. Yes – but I'm not sure which type
5. None of these [EXCLUSIVE]
99. Don't know [EXCLUSIVE]

INTRODUCTION – SHOW IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)

On the next two pages there will be some text about energy services that we would like you to read and understand.
The continue button will appear after a few seconds to give you some time to read the information.

Then when you are ready, please move onto the next questions.

INTRODUCTION FOR 6 – SHOW IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)

FREEZE CONTINUE BUTTON FOR 10 SECONDS

In the next few years, new smart technologies and services could help consumers to reduce energy bills and carbon emissions by shifting energy use to off-peak times.

With your agreement, some home appliances could be linked to a company like your energy supplier in the next few years. The company would remotely manage when these appliances run, within the conditions you set. Allowing them to do this automatically could lower your energy costs and help reduce carbon emissions by shifting your energy use to off-peak times.

NEW SCREEN

FREEZE CONTINUE BUTTON FOR 10 SECONDS

For example, this could include:

- **Heating: The supplier could manage heating times and/or adjust the thermostat by one or two degrees. For example they could turn the customer's heating on when the cost of energy falls. The customer could still control it manually through their heating controls.**
- **Electric Vehicles: If a customer has an electric vehicle, the supplier could manage charging times to when energy is cheaper. The customer could still charge manually or set it to charge through their own timer or app.**

This could reduce the customer's energy bills by helping them to use energy at times when it is cheaper, and could reduce the carbon emissions produced by the UK energy system.

ASK IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer)
SINGLE CODE

Q12. How comfortable or uncomfortable would you feel about a company managing each of the following on your household's behalf within the conditions you set?

Please select one option only per statement

RANDOMISE STATEMENTS

S1. When your home heating switches on and off

S2. [IF Q8 DUMMY EV OWNER = 1] **When your electric vehicle charges** [IF Q8 DUMMY EV OWNER = NOT 1] **When an electric vehicle your household uses charges, if your household got an electric vehicle in the future**

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Very comfortable
2. Fairly comfortable
3. Neither comfortable nor uncomfortable
4. Fairly uncomfortable
5. Very uncomfortable

99. Don't know [FIX]

Appliances and flexible energy use questions – 2 mins

INTRODUCTION – SHOW IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 = 5 (Has mains gas / electricity supply and is sole or joint energy billpayer and has white goods / appliances)

Now we have some questions specifically about how your household uses your laundry appliance.

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 = 5 (Has mains gas / electricity supply and is sole or joint energy billpayer, has a washing machine / combined washer/dryer)
SINGLE CODE

APP0. In a typical week, how often does your household use your washing machine or the wash cycle on a combined washer dryer?

Please select one option only

REVERSE CODES 1-7 FOR HALF OF RESPONDENTS

1. More than once a day
2. Once a day
3. 4-6 times a week
4. 2-3 times a week
5. Once a week
6. Less than once a week
7. Never
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 = 5 (Has mains gas / electricity supply and is sole or joint energy billpayer, has a washing machine / combined washer/dryer)
MULTI CODE

APP1. What time of day does your household usually run the washing machine or wash cycle on a combined washer/dryer?

If an external company controls when the appliance runs, please say when they usually run it.

Please select all that apply.

1. Between 8am – 11am
2. Between 11am – 1 pm
3. Between 1pm – 4pm
4. Between 4pm – 7pm
5. Between 7pm – 10pm
6. Between 10pm – 1am
7. Between 1am – 4am
8. Between 4am – 6am
9. Between 6am – 8am
10. It varies [EXCLUSIVE]
11. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 = 5 (Has mains gas / electricity supply and is sole or joint energy billpayer, has a washing machine / combined washer/dryer)
MULTI CODE

APP2. Does your household's washing machine or combined washer/dryer have a way to delay running it after loading (e.g. through an app or delay function)?

Please select all that apply

RANDOMISE CODES 1-2

1. Yes, through an app
2. Yes, through a delay function on the appliance
3. No, it does not have this feature [EXCLUSIVE]
4. Don't know [EXCLUSIVE]

INTRODUCTION – SHOW IF APP1 = 1,4 OR 5 (Runs washing machine / combined washer/dryer at peak times)

On the next page there will be some text about how your household uses its washing machine / combined washer/dryer that we would like you to read and understand before answering.

The answer buttons will appear after a few seconds to give you some time to read the information.

Then when you are ready, please move onto the next questions.

ASK IF APP1 = 1,4 OR 5 (Runs washing machine / combined washer/dryer at peak times)

SINGLE CODE

HIDE ANSWER BUTTONS FOR 10 SECONDS

APP4. Imagine a scenario when there would not be enough energy being produced to meet everyone's energy needs at peak times without turning on additional power stations (e.g. gas fired stations).

If households reduced their energy usage during days with the biggest shortages (up to 9 different days across the year), it could mean that these do not need to be turned on at all to meet energy needs.

One way in which your household could reduce its energy use during peak times would be to use your washing machine 'off-peak' [HOVER OVER **between 10pm – 8am or 11am – 4pm**] **rather than at peak times.**

If you were asked to, what proportion of your wash loads over a year would your household be willing and able to move to 'off-peak' times on these days?

Please select one option only

REVERSE CODES 1 – 5 FOR HALF OF RESPONDENTS

1. All of them (100%)
2. Almost all of them (more than 75%)
3. Most of them (about 50-75%)
4. Some of them (more than 25%, but less than 50%)
5. A few of them (less than 25%)
6. None of them

99. Don't know

INTRODUCTION – SHOW IF APP1 = 1,4 OR 5 (Runs washing machine / combined washer/dryer at peak times)

Again, on the next page there will be some text about how your household uses its washing machine / combined washer/dryer that we would like you to read and understand before answering.

The answer buttons will appear after a few seconds to give you some time to read the information.

Then when you are ready, please move onto the next questions.

ASK IF APP1 = 1, 4 OR 5 (Runs washing machine / combined washer/dryer at peak times)

SINGLE CODE

HIDE ANSWER BUTTONS FOR 10 SECONDS

APP3. The average cost of electricity for a wash cycle is 40p. Imagine the cost was reduced by half to 20p during 'off-peak' times [HOVER OVER **between 10pm – 8am or 11am – 4pm**]**. For a household that does one wash load per week off peak, they would save £10.40 a year.**

What proportion of your wash loads that you currently do at peak times would your household be willing and able to move to 'off-peak' times to make these savings?

Please select one option only

REVERSE CODES 1 – 5 FOR HALF OF RESPONDENTS

1. All of them (100%)
2. Almost all of them (more than 75%)
3. Most of them (about 50-75%)
4. Some of them (more than 25%, but less than 50%)
5. A few of them (less than 25%)
6. None of them
99. Don't know

ASK IF APP3 = 5 OR 6 OR APP 4 = 5 OR 6 (Could shift no more than 25% of washing machine / combined washer/dryer use to off-peak times)
MULTI CODE

APP5. It sounds like your household may find it difficult to shift when you run your washing machine/wash cycle to 'off-peak' times.

Which, if any, of the following reasons limits your household's ability to switch some or all of your energy consumption for running your washing machine/wash cycles to 'off-peak' times?

Please select all that apply

RANDOMISE STATEMENTS 1-11

1. Too noisy to run during the night
2. [SHOW IF Q9 = NOT 1] Would need a smart meter to take advantage of 'off-peak' energy costs / can't install smart meter
3. Would need additional / new appliances / technology to benefit (e.g. smart appliances, appliances with delay functions, timers)
4. Would not fit with my household's lifestyle / work patterns
5. Don't know enough about this / not heard of this before
6. Don't know how much we'll save
7. No guarantee we'll save money
8. Heard bad things
9. Not my / our choice – don't control when it runs
10. Wouldn't save enough to make it worthwhile

11. Safety concerns
12. Other (specify) [FIX]
99. Don't know [FIX]

Electric vehicle questions

INTRODUCTION – SHOW IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)

Next we have some questions about fully electric vehicles (cars or vans that you plug in to charge, not a hybrid). [IF Q8 DUMMY EV OWNER = 1: **You mentioned previously that your household has use of (an) electric vehicle(s).**]

ASK IF (Q1 = 1-3 AND Q2 = 1-2 AND Q8 DUMMY EV OWNER = NOT 1) (Has mains gas / electricity supply and is sole or joint energy billpayer and does not have a plug-in electric vehicle)
SINGLE CODE

EV1. How likely would your household be to [IF m_cars = 1, 998 OR 999 **get a fully electric car or van** IF m_cars = 2 **change your car or van to a fully electric one** IF m_cars = 3-5: **change your main car or van to a fully electric one] (a vehicle that you plug in and charge, not a hybrid) in the next two years?**

This could be a leased or company car or van.

Please select one option only

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Very likely
2. Quite likely
3. Neither likely or unlikely
4. Quite unlikely
5. Very unlikely
6. Not applicable – not my choice

99: Don't know [FIX]

ASK IF EV1 = 1-5 (All who are either likely or unlikely to get an EV in the next two years)
MULTI CODE

EV2. IF CODE 3-5 AT EV1: **For which, if any, of the below reasons is your household unlikely to get an electric car or van in the next two years?** IF CODE 1-2 AT EV1: **For which, if any, of the below reasons has your household not got an electric car or van yet?**

Please select all that apply

RANDOMISE STATEMENTS 1-15

1. The purchase price of the vehicle is too high
2. The costs of running it are too high (e.g. cost of charging, tax, maintenance etc.)
3. The range is not far enough
4. Concerns about reliability
5. Takes too long to charge
6. [SHOW ONLY IF EV1 = 3-5] Prefer a petrol / diesel-powered car / self-charging hybrid / plug-in hybrid
7. Nowhere to charge near home / lack of public charge points
8. Unable to get a charging point at home (e.g. no driveway, landlord / freeholder won't allow)

9. Using and charging an electric vehicle would not fit with my household's [IF EV1 = 1-2: current] lifestyle / work patterns
10. Don't know enough about them
11. There are no / insufficient grants or financial support schemes available to help buy / lease one
12. [SHOW ONLY IF EV1 = 3-5] Heard bad things
13. No particular reason
14. [SHOW ONLY IF EV1 = 3-5] Not looking to get a car / van at all
15. [SHOW ONLY IF EV1 = 1-2] Have not needed to get a car / van yet
16. Other (specify)
17. Don't know

ASK IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)

EV3. To what extent do you do you think each of these statements are true or false?

Please select one option only per statement

RANDOMISE STATEMENTS – ALWAYS SHOW S1 BEFORE S2

SINGLE CODE

S1. [IF Q8 DUMMY EV OWNER IS NOT 1] **If my household had a fully electric car or van, we would be able to charge it at home (such as in our garage or on our driveway)**

S2. [IF Q8 DUMMY EV OWNER IS NOT 1 AND IF EV3_S1 = 1 OR 2] **If my household had a fully electric car or van and a place to charge it, we would be able to charge the car at off-peak times (10pm-8am or 11am-4pm)**

S3. Electric vehicles can be set to charge at off-peak times (10pm-8am or 11am-4pm) to make them cheaper to run

REVERSE CODES 1-4 FOR HALF OF RESPONDENTS

1. Definitely true
2. Probably true
3. Probably false
4. Definitely false
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle)
SINGLE CODE

EV4. Where do you usually charge your household's (main) plug-in electric vehicle? If you charge in more than one place, please select the one you use most often.

Please select one option only

1. At home, using a private electric charging point
2. At home, using the electricity mains
3. At work / place of education
4. At a public chargepoint near home

5. At a public chargepoint at work / place of education or away from home
6. Other (please specify)
99. Don't know

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 AND EV4 = 1 OR 2 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle they charge at home)
SINGLE CODE

EV5a. Which of the following types of charger do you mainly use to charge your electric vehicle at home?

Please one option only

1. A **smart charger** which connects to the internet and allows you to charge depending on the cheapest time to use energy
2. A **conventional charger** without any internet connectivity (you may be able to control when this turns on using an app for your car)
3. I do not have a dedicated charger at home, but have an alternative method of charging my electric vehicle at home (e.g. outdoor three-pin plug socket, running an extension cable through a window / letterbox)
4. Something else (please specify)
99. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle)
SINGLE CODE

EV5b. Which of these best describes your household's <u>main</u> method for charging your (main) electric vehicle?

Please one option only

1. Use a conventional charger or smart charger which is set to start charging as soon as it's plugged in
2. [IF QEV5a = 1] Use a smart charger that is connected to the internet and charges when the price is lowest or there is more green energy available
3. Use a charger with an app or timer that is programmed to set when you want the vehicle to charge
4. [IF QEV5a = 1] An external company manages when your charger works on your behalf (e.g. turning it on/off remotely)
99. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 and EV5b=CODE 2, 3 or 4(Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle which is charged using some form of smart charger / timer)
SINGLE CODE

EV5c. In a typical month, how often does your household override any timers or smart settings on your electric vehicle charging point, so it starts charging as soon as it's plugged in?

Please one option only

1. 4 times a month or more

2. 2-3 times a month
3. Once a month
4. Less than once a month
5. Never
99. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle)
SINGLE CODE

EV6a. In a typical month, how often does your household charge your (main) electric vehicle?

Please select one option only

REVERSE CODES 1-7 FOR HALF OF RESPONDENTS

1. 4 times a month or more
2. 2-3 times a month
3. Once a month
4. Less than once a month
5. Never
6. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 Dummy EV OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a plug-in electric vehicle)
MULTI CODE

EV6b. What time of day does your household charge your (main) electric vehicle?

This may be different from the time you plug in the vehicle if you are using a form of smart charging.

If an external company controls when the charger starts, please say when they usually charge it.

Please select all that apply

1. Between 8am – 11am
2. Between 11am – 1 pm
3. Between 1pm – 4pm
4. Between 4pm – 7pm
5. Between 7pm – 10pm
6. Between 10pm – 1am
7. Between 1am – 4am
8. Between 4am – 6am
9. Between 6am – 8am
10. It varies [EXCLUSIVE]
99. Don't know [EXCLUSIVE]

INTRODUCTION – SHOW IF EV6b = 1, 4, OR 5 (Charges at peak times)

On the next page there will be some text about how your household charges its electric vehicle that we would like you to read and understand before answering.

The answer buttons will appear after a few seconds to give you some time to read the information.

Then when you are ready, please move onto the next questions.

ASK IF EV6b = 1, 4, OR 5 (Charges at peak times)

SINGLE CODE

HIDE ANSWER BUTTONS FOR 10 SECONDS

EV6c. The typical cost of charging an electric vehicle at home for one hour is £1.80. Imagine the cost was reduced by 80% to 35p during 'off-peak' times [HOVER OVER between 10pm – 8am or 11am – 4pm]. For a household that charges their electric vehicle for 8 hours twice a month during off-peak times, they would save £300 a year.

What proportion of energy you currently use to charge your electric vehicle at peak times would your household be willing and able to move to 'off-peak' times?

Please select one option only

REVERSE CODES 1 – 5 FOR HALF OF RESPONDENTS

1. All of it (100%)
2. Almost all of it (more than 75%)
3. Most of it (about 50-75%)
4. Some of it (more than 25%, but less than 50%)
5. A bit of it (less than 25%)
6. None
99. Don't know

ASK IF EV6c = 5 OR 6 (Could shift no more than 25% of usage to off-peak time)
MULTI CODE

EV7. It sounds like your household may find it difficult to shift when you charge your (main) electric vehicle at home to 'off-peak' times.

Which, if any, of the following reasons limits your household's ability to switch some or all of your energy consumption for charging your electric vehicle to 'off-peak' times?

Please select all that apply

RANDOMISE CODES 1-12

1. Chance that vehicle would not be ready/ charged enough in time for when it's needed
2. Unable to use a convenient charging point to charge off-peak (e.g. none available)
3. Would not fit with my household's lifestyle / work patterns
4. Would have to change energy tariff to take advantage of any cost savings
5. An appropriate tariff is not available for my household
6. Don't know enough about this / not heard of this before
7. Don't know how much we'll save
8. Heard bad things about this
9. Not my / our choice / drive a company car / van (e.g. have to charge at work during work hours)
10. Not enough benefits to justify changing / would not save enough by charging off-peak
11. Health and safety concerns

12. No particular reason / haven't thought about it before
13. Other (specify)
14. Don't know

Heat pump questions

INTRODUCTION – SHOW IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)

Next, we have some questions about heat pumps. These are a specific type of electric home heating system which extracts heat from the outside environment (such as the air or ground). [Q8 DUMMY HEAT PUMP OWNER = 1: **You mentioned previously that your household has a heat pump.**]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 DUMMY HEAT PUMP OWNER = NOT 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and does not have a heat pump)
SINGLE CODE

HP1. How likely would your household be to change your central heating system to a heat pump in the next two years?

Please select one option only

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Very likely
2. Quite likely
3. Neither likely or unlikely
4. Quite unlikely
5. Very unlikely
6. Not applicable – not my choice

99: Don't know [FIX]

ASK IF HP1 = 1-5 (All likely or unlikely to get a heat pump in the next two years)
MULTI CODE

HP2. IF CODE 3-5 AT HP1: **For which, if any, of the below reasons is your household unlikely to get a heat pump in the next two years?** IF CODE 1-2 AT HP1: **For which, if any, of the below reasons has your household not got heat pump yet?**

Please select all that apply

RANDOMISE CODES 1-16

1. The purchase price or running cost is too high
2. Concerns about reliability or safety
3. Too noisy
4. Will not heat our home to a suitable temperature
5. [SHOW ONLY IF Q9=2-4:] Would need a smart meter to be able to benefit from off-peak energy costs / can't install smart meter
6. Our [IF HP1 = 1-2: current] home is unsuitable for a heat pump (e.g. live in flat, property layout, no outside space)
7. Hassle / disruption of installing a heat pump

8. Would need to make additional home improvements (e.g. install insulation, hot water tank, battery storage, bigger radiators, different piping etc.)
9. Would not fit with my household's [IF HP1 = 1-2: current] lifestyle / work patterns
10. Don't know enough about them / not heard of them before
11. There are no / insufficient grants or financial support schemes available to help buy one
12. [SHOW ONLY IF HP1 = 3-5] Heard bad things
13. Not my / our choice – landlord or freeholder would decide
14. [SHOW ONLY IF HP1 = 3-5] Prefer current / alternative heating system e.g. gas boiler, biomass boiler etc.
15. No particular reason / haven't thought about it before
16. No need – [IF HP1 = 1-2: currently] on communal or district heating
17. Other (please specify)
18. Don't know

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 DUMMY HEAT PUMP OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a heat pump)

SINGLE CODE

HP4. How does your household usually run your heat pump to heat your home on a typical day in winter?

Please select one option only

1. It runs constantly
2. It runs at pre-set times that are programmed in
3. I / we turn it on and off manually
4. An external company controls when it runs
99. Don't know [FIX]

ASK IF HP4 = NOT 1 (Does not run heat pump constantly)
SINGLE CODE

HP5a. In a typical week during winter, how often does your household run your heat pump to heat your home?

Please select one option only

REVERSE CODES 1-7 FOR HALF OF RESPONDENTS

1. More than once a day
2. Once a day
3. 4-6 times a week
4. 2-3 times a week
5. Once a week
6. Less than once a week
7. Never
8. Don't know [FIX]

ASK IF HP4 = NOT 1 (Does not run heat pump constantly)

MULTI CODE

HP5b. During winter, what time of day does your household usually run your heat pump to heat your home?

[IF HP4 = 4: **If an external company controls when the appliance runs, please say when they usually run it.]**

Please select all that apply

1. Between 8am – 11am
2. Between 11am – 1 pm
3. Between 1pm – 4pm
4. Between 4pm – 7pm
5. Between 7pm – 10pm
6. Between 10pm – 1am
7. Between 1am – 4am
8. Between 4am – 6am
9. Between 6am – 8am
10. It varies [EXCLUSIVE]
99. Don't know [EXCLUSIVE]

INTRODUCTION – SHOW IF HP4 = 1 OR HP5b = 1, 4, 5 (Heat pump runs constantly or at peak times)

On the next page there will be some text about how your household runs its heat pump to heat your home that we would like you to read and understand before answering.

The answer buttons will appear after a few seconds to give you some time to read the information.

Then when you are ready, please move onto the next questions.

ASK IF HP4 = 1 OR HP5b = 1, 4, 5 (Heat pump runs constantly or at peak times)

SINGLE CODE

HIDE ANSWER BUTTONS FOR 10 SECONDS

HP6. It sounds like your household runs your heat pump constantly or at peak times.

The average cost of electricity for running a heat pump is 60p per hour. Imagine the cost was reduced by half to 30p during 'off-peak' times [HOVER OVER: **Between 10pm – 8am or 11am – 4pm].**

A household that runs their heat pump during peak times between October and April to heat their home, would save £255 a year if they moved 4 hours of this usage to 'off-peak' times only.

Thinking about the period between October and April, which of the following would your household be willing and able to do for the 4 hours of peak time (between 8am-11am or 4pm-10pm)?

Please select one option only

REVERSE CODES 1 – 4 FOR HALF OF RESPONDENTS

1. Stop using heat pump to warm the home during all 4 peak time hours
2. Use heat pump to warm the home for only 3 of those 4 hours
3. Use heat pump to warm the home for only 2 of those 4 hours
4. Use heat pump to warm the home for only 1 of those 4 hours
5. None of the above [EXCLUSIVE]

99. Don't know [EXCLUSIVE]

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q8 DUMMY HEAT PUMP OWNER = 1 (Has mains gas / electricity supply and is sole or joint energy billpayer and has a heat pump)

SINGLE CODE

HP7. Are you aware that you can pre-heat your home using your heat pump during off-peak times and pay less (e.g. run your heat pump at 4 – 5am so the house is warm during morning peak times)?

REVERSE CODES 1-3 FOR HALF OF RESPONDENTS

1. Yes, I'm aware and already do this
2. Yes, I'm aware but don't do this
3. No, I'm not aware of this

99. Don't know [FIX]

Time of Use Tariff questions

INTRODUCTION – SHOW IF Q1 = 1-3 AND Q2 = 1-2 (Has mains gas / electricity supply and is sole or joint energy billpayer and has or has heard of TOU tariffs)

Now we have some questions about Time of Use tariffs. On these energy tariffs, energy is cheaper at specific times of the day / night or the same days of the week (e.g. over the weekend). These are referred to as 'off-peak' times. Examples include Economy 7, Economy 10, British Gas Peak Save or E.on Next Smart Saver.
[IF Q10b = 2-3**: You mentioned previously that your household is on a Time of Use tariff.]**

ASK IF Q1 = 1-3 AND Q2 = 1-2 AND Q10b = NOT 2-3 (Has mains gas / electricity supply and is sole or joint energy billpayer and not on a TOU or dynamic tariff)

SINGLE CODE

TOU1. How likely is your household to change your energy tariff to a Time of Use tariff in the next two years?

Please select one option only

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Very likely
2. Quite likely
3. Neither likely or unlikely
4. Quite unlikely
5. Very unlikely
6. Not applicable – not my choice

99: Don't know [FIX]

ASK IF TOU1 = 1-5 (All likely or unlikely to switch to a TOU)
MULTI CODE

TOU2. IF CODE 3-5 AT TOU1: **For which, if any, of the below reasons is your household unlikely to switch to a Time of Use tariff in the next two years?** IF CODE 1-2 AT TOU1: **For which, if any, of the below reasons has your household not switched to a Time of Use tariff yet?**

Please select all that apply

RANDOMISE CODES 1-18

1. Would increase energy bills
2. Don't trust [IF TOU1 = 1-2: current] energy supplier to charge less when energy price drops / charge a fair price
3. Too difficult to change tariff
4. [SHOW ONLY IF TOU1 = 3-5] Can't change behaviour / run appliances / charge vehicle overnight to benefit from it
5. [SHOW ONLY IF Q9=2, 3,4 OR 99:] Would need a smart meter to be able to take advantage of off-peak energy costs / can't install smart meter
6. Running appliances overnight would be too noisy
7. Would need additional appliances / technology to benefit from it (e.g. smart appliances, appliances with delay functions, timers)
8. [SHOW ONLY IF TOU1 = 3-5] Would need to change when I / we use energy at home
9. Would not fit with my household's [IF TOU1 = 1-2: current] lifestyle / work patterns
10. [SHOW ONLY IF TOU1 = 3-5] Don't know enough about this / not heard of this before
11. Don't know how much we'll save
12. No guarantee we will save money
13. Heard bad things
14. [SHOW ONLY IF TOU1 = 3-5] Not my / our choice – don't choose my household's energy tariff
15. [SHOW ONLY IF TOU1 = 3-5] Wouldn't save enough to make it worthwhile
16. [SHOW ONLY IF TOU1 = 3-5] Have specific needs e.g. medical appliances need to run all the time
17. No particular reason / haven't thought about it before
18. Energy supplier doesn't offer it
19. Other (specify)
99. Don't know

ASK IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)

SINGLE CODE

TOU3. To what extent do you agree or disagree with the following statement?

Using a tariff with off-peak rates when energy is cheaper and peak rates when energy is more expensive at certain times or days of the week [IF Q10a = NOT 1 **would save**] [IF Q10a = 1 **saves**] **my household money.**

REVERSE CODES 1-5 FOR HALF OF RESPONDENTS

1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
99. Don't know [FIX]

Closing demographics

INTRODUCTION CLOSING DEMOGRAPHICS

We have some final questions we'd like to ask you about you and your household, so we can look at your answers alongside those of other people like you.

As a reminder: some of the following questions may be considered personal. We would like to remind you that your participation is voluntary and that your responses are used for research purposes only. The answers that you provide will be presented in aggregate form and none of them will be linked back to you in any way. All data will be collected and processed in adherence to the Market Research Society's Code of Conduct and the General Data Protection Regulation (GDPR). A "Prefer not to answer" option will be available for you to select if you wish to use it.

ASK IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)
SINGLE CODE

Q14. Which one of the following statements best describes how well you are keeping up with all of your bills and credit commitments at the moment?

Please include those you have personally or jointly with a partner or spouse.

Please select one option only

1. I am / we are keeping up with all bills and commitments without any difficulties
2. I am / we are keeping up with all bills and commitments, but it is a struggle from time to time
3. I am / we are keeping up with all bills and commitments, but it is a constant struggle
4. I am / we are falling behind with some bills or credit commitments
5. I am / we are having real financial problems and have fallen behind with many bills or credit commitments
6. I / we don't have any bills or credit commitments

98. Prefer not to say [FIX]
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)
SINGLE CODE

Q15. And which, if any, of the following statements best describes how well your household is keeping up your energy bills or topping up your energy meter specifically at the moment?

Please one option only

1. Keeping up with energy bills or topping up our energy meter without any difficulties
2. Keeping up with energy bills or topping up our energy meter, but it is a struggle from time to time
3. Keeping up with energy bills or topping up our energy meter, but it is a constant struggle
4. Falling behind with energy bills or topping up our energy meter sometimes
5. Having real financial problems and falling behind with energy bills or topping up our energy meter
6. None of these [FIX]

98. Prefer not to say [FIX]
99. Don't know [FIX]

ASK IF Q1 = 1-3 AND Q2 = 1-2 (HAS MAINS GAS / ELECTRICITY SUPPLY AND IS SOLE OR JOINT ENERGY BILLPAYER)
SINGLE CODE

Q16. Do you or anyone in your household have any high-risk needs that require you to use medical equipment at home that run on energy?

For example, this could be a dialysis machine, an oxygen concentrator or a ventilator.

Please select one option only

1. Yes
2. No
98. Prefer not to say [EXCLUSIVE]
99. Don't know [EXCLUSIVE]

SHOW ALL

Thank you for answering our questions. We very much appreciate your time. To remind you, this survey is being conducted by Ipsos on behalf of Ofgem.

Standard outro text

ASK ALL

Outro_1

The survey is now finished.

Thank you for taking part. Please have a look out for your next survey, soon!

You can now close your browser to exit the survey, or check your balance on the KnowledgePanel portal.

Annex B. Detailed typology definitions

The typology groups were defined as follows:

Table 6.1: Typology definition: heat pumps

GROUP 1.1. Able and willing to flex to save money **SUBGROUP 1.1.1.** • Heat pump (Q8 DUMMY Heat Pump Owner = 1) • Use at **off-peak** times **only** (HP5b = (2, 3, 6, 7, 8, 9 ONLY)) **OR** **SUBGROUP 1.1.2.** • Heat pump (Q8 DUMMY Heat Pump Owner = 1) • Use at peak times (some of the time) or constantly (HP4 = 1 OR HP5b = AT LEAST ONE OF (1, 4, 5) AND AT LEAST ONE OF (2, 3, 6, 7, 8, 9)) • Aware of pre-heating and does (HP7 = 1) **OR** **SUBGROUP 1.1.3.** • Heat pump (Q8 DUMMY Heat Pump Owner = 1) • Use at peak times (some of the time, only or constantly) (HP4 = 1 OR HP5b = 1, 4, 5) • Aware of pre-heating and doesn't do / not aware (HP7 = 2-3) OR HP7 = DK (treat as does not pre-heat) • Willing to shift when use (more than 25% of use) (HP6 = 1-3)
GROUP 1.2 Have technology, but not able / willing to flex to save money • Heat pump (Q8 DUMMY Heat Pump Owner = 1) • Use at peak times (some of the time, only or constantly) (HP4 = 1 OR HP5b = 1, 4, 5) • Aware of pre-heating and doesn't do / not aware (HP7 = 2-3) OR HP7 = DK (treat as does not pre-heat) • Not willing to shift when use or only willing to shift up to 25% of use (HP6 = 4-5)
GROUP 1.3 Does not have technology due to soft barriers • No heat pump (Q8 DUMMY Heat Pump Owner = NOT 1) • Soft barriers to getting a heat pump (HP2 = 2, 5, 10, 12, 14, 15)
GROUP 1.4 Does not have technology due to hard barriers • No heat pump (Q8 DUMMY Heat Pump Owner = NOT 1) • Hard barriers to getting a heat pump (HP2 = 1, 3, 4, 6, 7, 8, 9, 11, 13, 16)
Group 1.5 Have technology but willingness to flex unknown • Heat pump (Q8 DUMMY Heat Pump Owner = 1) **AND ONE OF THE FOLLOWING** • Energy consumption pattern is unknown (answered "it varies" or "Don't know" at HP5b) **OR** • Runs heat pump at peak times or constantly, AND answered "Don't know" to the willingness to shift/flex question (HP6)

Group 1.6 Does not have technology and unassessed barriers No heat pump (Q8 DUMMY Heat Pump Owner = NOT 1) Likelihood to get (HP1) is either "not applicable – not my choice" (Code 6 in QNR) or "don't know" (Code 99 in QNR) meaning they that they were excluded from QHP2 (barriers to ownership), meaning barriers are "unassessed"

Table 6.2: Typology definition: EVs

2.1 Have technology and able and willing to flex **2.1.1** EV owners who charge **off-peak only** • EV (Q8 DUMMY EV OWNER = 1) • Charge at off-peak times only (EV6b = (2, 3, 6, 7, 8, 9, ONLY)) **OR** **2.1.2** EV Owner who charges at peak times, but **willing to flex** • EV (Q8 DUMMY EV OWNER = 1) • Charges at peak times (some of the time or only) (EV6b = 1, 4, 5) • Willing to shift charging (more than 25% of use) (EV6c = 1-4)
2.2 Have technology, but not able / willing to flex ~~to save money~~ • EV (Q8 DUMMY EV OWNER = 1) • Charges at peak times (some of the time or only) (EV6b = 1, 4, 5) • **Not willing to shift** when use or only willing to shift up to 25% of use (**EV6c = 5-6**)
2.3 Does not have technology due to soft barriers • No EV AND • Only Soft barriers to getting an EV (EV2 = 3, 4, 5, 6, 10, 12, 13)
2.4 Does not have technology due to hard barriers • No EV AND • **Any** Hard barriers to getting an EV (EV2 = 1, 2, 7, 8, 9, 11, 14, 15)
Group 2.5 Have Technology but willingness to flex unknown • EV (**Q8** DUMMY EV OWNER = 1) **AND ONE OF THE FOLLOWING** •EV charging patter unknow: It either "varies" (Code 10) or "don't know" (Code 99) at **EV6b**) OR •Willingness to flex unknown – DK (code 99) **EV6c**
Group 2.6 Does not have technology and unassessed barriers • No EV AND •Answered (Code 6) "not applicable – not my choice" or (code 99) "Don't know" at **EV1** (which means they are not asked (routed into) barriers (ev2) so cannot be classified into hard/soft barriers)

Table 6.3: Typology definition: washing machines

OVERALL GROUP 1. Washing machines
3.1. Able and willing to flex to save money 3.1.1 • Washing machine (Q8 = 5) **AND** • Use at **off-peak times (only)** (APP1 = (2, 3, 6, 7, 8, 9 ONLY)) **OR** 3.1.2 • Washing machine (Q8 = 5) **AND** • Use at **peak times** (some of the time or only) (APP1 = 1, 4, 5) **AND** • **Willing to shift** more than 25% of use (APP4 = 1-4 OR APP3 = 1-4)
3.2 Have technology, but not able / willing to flex to save money • Washing machine (Q8 = 5) **AND** • Use at **peak times** (some of the time or only) (APP1 = 1, 4, 5) **AND** • **Not willing to shift** use or only willing to shift up to 25% (APP4 = 5 OR 6 AND APP3 = 5 OR 6)
3.3 **Does not have technology due to soft barriers** • No washing machine (Q8 = NOT 5) **AND** • Mention only Soft barriers to getting (Q7_S2 = 5,6,7) or "other", "don't know" or none of these (i.e. no hard barriers mentioned)
3.4 **Does not have technology due to hard barriers** • No washing machine (Q8 = NOT 5) **AND** • **Any** Hard barrier to getting (Q7_S2 = 1,2,3 or 4) including new variable from "other specify" them "Communal Washer and/or dryer"
Group 3.5 Have technology but willingness to flex unknown • Washing machine (Q8 = 5) **AND ONE OF THE FOLLOWING** •APP1 = EXCLUSIVE CODE 10 "it varies" OR EXCLUSIVE CODE 11 "don't know" **OR** Willingness to flex unknown CODE 99 "don't know" selected at APP3 **AND** CODE 99 "don't know" selected APP4 (*this is to ensure mutually exclusive generally, but in particular with group 3.1 and 3.2*) **OR** "missing variables" at ownership questions (app0 onwards
Group 2.6 Does not have technology and unassessed barriers N/A to this technology group – as all are routed into barriers question (and DK's and other Specifies are treated as soft barriers

Annex C. Smart data consent wording

Help protect energy consumers. Earn a further £10 with a one-time share of your energy usage data.

Thank you for completing our survey!

To better understand how to bring down household energy bills and protect consumers, we are inviting participants to share their household energy consumption data with Ipsos. Ipsos will conduct this research for Ofgem, the GB Energy Regulator.

If you are willing and able to let us use your data for energy research, we will credit your account with an additional **1000 KnowledgePanel Points** as a thank you.

The additional steps to share your data should take **around 5 minutes more of your time.**

Please note:

- *The data retained by Ofgem and Ipsos after the study will be used for research and analysis purposes only. Your personal identifiable data will not be provided to Ofgem, and it will not be possible for Ofgem to identify you in the data.*
- *You would only share your historic smart meter data. No data would be collected on an ongoing basis.*

Please read through the following information which explains the data that will be needed and how it will be handled and used. If you would like further information at any point, please contact one of the organisations in the Contact Details section at the end.

If, after reading the information presented, you would like to agree, then please complete the consent question at the end.

Accessing your data to help understand how households use energy

Why is this research being conducted?

By analysing household energy consumption, we can design solutions that better protect consumers and help us to achieve a sustainable energy system at lower cost for consumers. For example, we will be able to design solutions that optimize the use of renewable energy sources, which are abundant at certain times of day and more limited at others. Ultimately this could be beneficial for everyone by lowering household energy bills and infrastructure costs. Ofgem has appointed the research company Ipsos and its approved partners to conduct this research independently.

What does the research involve?

The research involves the collection and analysis of energy consumption data. To do this, Ipsos needs to access data held in your smart meter on how much energy your household uses. Details of how Ipsos will access and use this data are included below. If you choose to take part in the research, Ipsos will access the data using a service provided by n3rgy (https://n3rgy.com, further details on n3rgy are provided below).

Do I have to take part, and can I withdraw?

Taking part in this research is entirely voluntary.

If you sign-up now, you can withdraw your consent at any time without giving a reason, by emailing OfgemFANZSurvey@ipsosresearch.com. If you withdraw from this part of the research, your smart meter data will be deleted by Ipsos and Ofgem.

We will provide these details to you as a follow-up by email if you consent.

What data will be accessed from my smart meter?

If you choose to participate in the research, n3rgy will retrieve the following data from your gas and/or electricity smart meter(s) and share it with Ipsos:

- Electricity half-hourly consumption and export data, and gas half-hourly consumption data, for the time period since you had your smart meter installed or when you moved into the property (going back up to a maximum of 13 months from today).
- Electricity and gas tariff data containing information on the prices you are charged for energy consumed.
- Information identifying the energy meter (number, location, type).

You will not need to provide any meter readings manually.

What will Ipsos do with my data?

Ipsos will link your energy consumption data with your responses in the survey you have just completed. This will allow Ipsos to assess differences in energy consumption based on household factors captured through the survey, for example, which technologies you have in the home and how they are used.

At the end of the study, Ipsos will remove your identifiable personal data and share the smart meter data highlighted above with Ofgem for further research. Your smart meter data will be used by Ofgem and Ipsos solely for the research purposes outlined above, and it will not be shared with anyone else under any circumstances.

Will my taking part in this project be kept confidential?

Your participation in the research will be kept strictly confidential. Ipsos and Ofgem commit to safeguarding your privacy. Your name and address will not be shared with Ofgem or anyone else.

How long will my smart meter data be retained for?

The anonymised energy consumption data shared as part of this research will be retained by Ipsos and Ofgem indefinitely and will only be used for the research purposes explained.

Will my data ever be sold or used for commercial purposes?

No, the data accessed will be controlled by the Ipsos and Ofgem teams and will never be sold and will only be used for the research purposes described here.

What will happen to the results of the research?

Ipsos and Ofgem may publish the results of the research in a variety of reports or publications such as government research papers, academic journals, and at conferences. Individuals and households will not be identified in any publication.

Please now read the Data Protection Privacy Notice presented on the next screen to understand how your data will be kept secure and then complete the consent question.

Data Protection Privacy Notice

According to data protection legislation, Ipsos is the Data Controller of the Ipsos KnowledgePanel and n3rgy are the Data Processors of your personal data. Ipsos and Ofgem are joint controllers of the survey responses and smart meter data collected. The categories of personal data processed by Ipsos and n3rgy include: your address and smart meter data. If you give your consent to share this data, Ipsos and n3rgy will use that explicit consent as their lawful basis for processing the data.

n3rgy data service (https://n3rgy.com) is used by Ipsos to interface with the national smart meter systems in order to collect, store, manage and share with Ipsos your smart meter data. This service uses the Smart Energy Code (https://smartenergycodecompany.co.uk/) Party credentials and Party ID of N3RGY DATA LIMITED, incorporated and registered in England and Wales with the company number 11712674.

Ipsos, n3rgy and Ofgem will only process your personal data as long as required for the purposes of this research. They will keep your data secure, store your address details separately from data used for research, and minimise the processing of personal data wherever possible, in accordance with data protection legislation. Your personal data for this project will be securely deleted after three months from the project's end. Further information about your rights, and how Ipsos and n3rgy use participant information, is available at:

https://www.ipsos.com/en-uk/privacy-data-protection

https://www.n3rgy.com/privacy/

What if you have a query or something goes wrong?

If you have any queries, or wish to make a complaint, about how Ipsos, n3rgy and Ofgem processes your data for this project, you can contact them using the details provided below. If you remain unsatisfied, you have the right to lodge a formal complaint with the UK Information Commissioner's Office (ICO). Full details may be accessed on the complaints section of the ICO's website: https://ico.org.uk/make-a-complaint/

Contact Details

Ipsos

Email: OfgemFANZSurvey@ipsosresearch.com. Website: www.ipsos.com

Address: Flexibility and Net Zero Survey, Ipsos, 3 Thomas More Square, London E1W 1YW

Ofgem

Email: consumer.first@ofgem.gov.uk Website: https://www.ofgem.gov.uk/

Address: Ofgem, 10 South Colonnade, Canary Wharf, London E14 4PU

n3rgy

Email: dpo@smsenergy.com Website: https://www.n3rgy.com/

Address: Data Protection Officer, Smart Metering Systems Limited, 2nd Floor, 48 St Vincent Street, Glasgow, G2 5TS

Our standards and accreditations

Ipsos' standards and accreditations provide our clients with the peace of mind that they can always depend on us to deliver reliable, sustainable findings. Our focus on quality and continuous improvement means we have embedded a "right first time" approach throughout our organisation.

ISO 20252

This is the international specific standard for market, opinion and social research, including insights and data analytics. Ipsos UK was the first company in the world to gain this accreditation.

Market Research Society (MRS) Company Partnership

By being an MRS Company Partner, Ipsos UK endorse and support the core MRS brand values of professionalism, research excellence and business effectiveness, and commit to comply with the MRS Code of Conduct throughout the organisation & we were the first company to sign our organisation up to the requirements & self-regulation of the MRS Code; more than 350 companies have followed our lead.

ISO 9001

International general company standard with a focus on continual improvement through quality management systems. In 1994 we became one of the early adopters of the ISO 9001 business standard.

ISO 27001

International standard for information security designed to ensure the selection of adequate and proportionate security controls. Ipsos UK was the first research company in the UK to be awarded this in August 2008.

The UK General Data Protection Regulation (UK GDPR) and the UK Data Protection Act 2018 (DPA)

Ipsos UK is required to comply with the UK General Data Protection Regulation (GDPR) and the UK Data Protection Act (DPA). These cover the processing of personal data and the protection of privacy.

HMG Cyber Essentials

Cyber Essentials defines a set of controls which, when properly implemented, provide organisations with basic protection from the most prevalent forms of threat coming from the internet. This is a government-backed, key deliverable of the UK's National Cyber Security Programme. Ipsos UK was assessed and validated for certification in 2016.

Fair Data

Ipsos UK is signed up as a "Fair Data" company by agreeing to adhere to twelve core principles. The principles support and complement other standards such as ISOs, and the requirements of data protection legislation. .

For more information

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Ipsos Public Affairs

Ipsos Public Affairs works closely with national governments, local public services and the not-for-profit sector. Its c.200 research staff focus on public service and policy issues. Each has expertise in a particular part of the public sector, ensuring we have a detailed understanding of specific sectors and policy challenges. Combined with our methods and communications expertise, this helps ensure that our research makes a difference for decision makers and communities.