Department for Energy Security & Net Zero

Interim Evaluation of Domestic Energy Affordability Support Schemes in Great Britain

Annex A: Technical Report

April 2025

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Annex A1 Evaluation methodology

1.1 Evaluation context

The GB domestic energy affordability schemes evaluation was a mixed methods, process, outcome and early impact evaluation of: the Energy Price Guarantee (EPG); Energy Bills Support Scheme (EBSS); EBSS Alternative Funding (EBSS AF); Alternative Fuel Payment (AFP); and AFP Alternative Funding (AFP AF) schemes. This formed part of a package of evaluations which looked at the UK energy affordability schemes. In addition to the interim evaluation in GB, and commissioned separately, there has also been an evaluation of the energy affordability schemes in Northern Ireland. An impact and economic evaluation of UK wide domestic energy affordability schemes is also being undertaken which will report separately.

1.2 Overarching evaluation approach

Overall, as an interim (process, outcome and early impact) evaluation, this evaluation uses a theory-based evaluation (TBE) approach to examine how the energy affordability schemes have been delivered (process) and how they contributed towards their intended outputs and outcomes. The main theory-based approach used to examine the outcomes of the energy affordability schemes was contribution analysis. This evaluation also draws upon a range of modelling and secondary data analysis to support the understanding of the process and outcomes of the schemes. A separate economic and impact evaluation of the schemes was commissioned in 2024 to provide final evidence on attribution of impact and overall value for money.

The evaluation comprised the following data collection and analysis strands:

Large-scale surveys of households

This is described further in Section A2 below.

Qualitative depth interviews with households, key stakeholders and organisations (or experts in vulnerable household groups)

This is described further in Section A3 below.

Price elasticity modelling

To provide an estimate of how the energy affordability schemes affected energy and non-energy consumption during the intervention period, the evaluation team also used Almost Ideal

Demand System (AIDS/QUAIDS) models[1] of demand to calculate price elasticities of demand (the change of consumer demand for a product or service following a change of its price). These consumer demand models were used to estimate how consumer demand for energy and non-energy goods and services change in response to a change in energy prices. They allow estimation of counterfactual price scenarios (what would have happened to consumer demand if the energy affordability support schemes had not been in place.

To model the preferences of consumers, the analysis used a structural model which estimates a system of consumer demand functions. The functions in these models take prices and income as the inputs, and output price elasticities and expenditure, generally expressed as a budget share. Price elasticities of demand are modelled as the percentage changes in energy consumption relative to the percentage changes in prices, for each household group included in the model. These models enable comparisons of the output function at varying price and income levels, such as with/without the EBSS and EPG.

This analysis is described in more detail in Annex C.

Analysis of monitoring data and management information

Data from scheme management and monitoring was analysed to better understand how planned interventions were implemented in practice, and to compare this against the initial expectations of DESNZ. The evaluation team examined scheme business cases and analysis undertaken by DESNZ accompanying the initial business cases and delivery of the schemes, monitoring data (number of households reached, payments delivered, vouchers redeemed (PPM customers), and applications made and processed (EBSS AF and AFP AF)[2]). The team also reviewed final scheme reconciliation reports and updated figures where these were available. Importantly, information from the schemes' external auditors was not available at the time of this evaluation.

Desk based research and other secondary data

Secondary data was reviewed and triangulated to complement primary research findings, in particular research undertaken by the ONS, Ofgem, and the Bank of England. More information about this analysis is available in Section A4 below.

Separate to the process, interim and early outcome evaluation, the study involved estimating the population eligible for the EBSS AF scheme, which includes households who did not have a relationship with a domestic electricity supplier such as those in care homes, those in caravans or park homes, and houseboats. This work is summarised in Annex C.

[1] Deaton, A., and J. Muellbauer (1980): "An Almost Ideal Demand System," American Economic Review, 70(3), 312–326.
[2] This data reflected the status as of July 1, 2023 and was provided by DESNZ in the form of delivery dashboards for EBSS GB, EBSS AF, AFP, and AFP AF.

1.3 Evaluation Framework

1.3.1 Evaluation aims

Process evaluation aims

The overarching aims of the process evaluation were:

- To explore how the interventions were implemented, including efficiency, effectiveness and consistency of implementation in relation to recipient groups and by delivery mechanism;
- To explore awareness, understanding, perceptions and experience of the interventions among different recipient groups.

Outcome evaluation aims

The overarching aims of the outcome evaluation were:

- To provide evidence on the outcomes and the perceived impacts of the interventions;
- To provide early insights into the impacts of the interventions as reported by households and stakeholders and through modelled evidence and secondary data analysis.

Early outcomes are considered separately to impacts where there is more consideration of attribution and net outcomes. As part of the interim evaluation contract a plan for undertaking a UK-wide Impact and Economic Evaluation for the domestic energy affordability schemes was developed. This plan informed the development of a DESNZ invitation to tender and a project which launched in summer 2024 and will report separately.

Underpinning these overarching aims were a comprehensive set of evaluation questions which can be found below.

1.3.2 Evaluation questions

Draft evaluation questions were designed by DESNZ (then BEIS) as part of the invitation to tender process, and were later developed and refined through a series of discussions with DESNZ. The evaluation questions for the process and outcome evaluation were:

Table 1 Evaluation questions

Process Evaluation		
Theme	Question Number	Evaluation Question
Household Awareness and Understanding	PEQ 1	What were the levels of awareness of the interventions? What information about the different interventions did households receive from government and from suppliers, and at what point?
	PEQ 2	What were the levels of awareness of having received the interventions?
	PEQ 3	What were levels of understanding of the support amongst intended recipients in terms of what support they were eligible for, when they would receive this support and how?
	PEQ 4	How did awareness and understanding levels vary by different sub-groups of the bill-payer population? For application-based schemes, sub-groups also relate to user groups, such as care homes, caravans, etc.)?
	PEQ 5	To what extent did awareness and understanding change over time among different sub-groups?
	PEQ 6a	What were the levels of understanding around what the Energy Price Guarantee does and its relationship with the Energy Price Cap?
	PEQ 6b	How did levels of awareness of the EBSS Alternative Funding intervention compare to the standard EBSS intervention among different eligible sub-groups?
Delivery and Reach	PEQ 7	What was the reach of the interventions across the intended recipients?

	PEQ 8	How has the reach of all interventions varied by different sub-groups of the bill-payer population?
	PEQ 9	To what extent did all eligible households receive the EBSS full support available (i.e., £400 grant received)?
	PEQ 10	To what extent was the support delivered to all eligible households evenly throughout the lifetime of the schemes?
	PEQ 11	What was the scale of outstanding payments each month and how quickly were these outstanding payments made?
	PEQ 12a	What proportion of traditional PPM customers redeemed their vouchers?
	PEQ 12b	What were the reasons for PPM customers not redeeming their vouchers?
	PEQ 13	What was the take-up of the scheme among different sub-groups?
	PEQ 14	What evidence, if any, was there of intermediaries such as landlords not passing energy price support through to end-beneficiaries?
	PEQ 15a	How were lessons learned from delivery of other large-scale programmes applied to the delivery of schemes?
	PEQ 15b	What were the processes involved with delivering the interventions (including closure of schemes that ended in 2023)? What processes worked well and less well for delivering the intended benefits? What barriers, challenges and issues were encountered by different stakeholders in delivering the schemes as intended?
	PEQ 16	Were the interventions delivered consistently across suppliers and Local Authorities? If not, why not?
	PEQ 17	What was the scale of burden (time and costs incurred) on suppliers, local governments, scheme administrators Ofgem to deliver the different interventions? What steps did DESNZ take to mitigate the burden on suppliers and to what degree were these effective?

	PEQ 18	What lessons were learnt from the delivery of support over winter 2023/23 and how were these applied to the delivery of subsequent support?
	PEQ 19	What compliance and enforcement processes were carried out (including readiness testing) and to what extent did they encourage compliance? What was the nature, extent and scale of fraud and gaming and how did this compare between interventions? What was the nature of scams encountered by households and how were these resolved?
	PEQ 20	How was the Energy Price Guarantee applied to energy accounts and was it applied as it had been communicated by government and suppliers? Were there any inconsistencies regarding the level of price cap applied?
	PEQ 21	Was the process of scheme administrators delivering compensation payments to suppliers effective and efficient? What was the burden on DESNZ in delivering payments to scheme administrators? To what degree were suppliers' forecasts accurate, mitigating the amount of underspend that needed to be reclaimed?
	PEQ 22	What were the reasons for any delays or unevenness in the time profile of the delivery of the payments?
	PEQ 23	If applicable, what were the reasons why some households did not receive the full support?
	PEQ 24	What was the experience of delivery for Local Authorities? What tools did DESNZ provide to support delivery and how effective were they?
	PEQ 25	What actions did stakeholders involved with scheme delivery (e.g., DESNZ, Local Authorities, suppliers) take to raise awareness of the intervention and encourage take-up of the intervention among hard-to-reach groups? How effective were they?
	PEQ 26	Was there any evidence of gaming and fraud among applicants? How were such cases detected?
	PEQ 27	How did the experience of receiving the schemes vary by different sub-groups of the bill-payer population (including

		based on which interventions they are eligible for, their supplier, payment type, location, and socio-economic characteristics)?
	PEQ 28	What was the scale and nature of enquiries from households to suppliers, Local Authorities, Ofgem and other organisations supporting households (including charities such as CAB and Age UK) seeking support with understanding the interventions? Did households receive timely advice?
Household Experience	PEQ 29	To what extent did the experiences of different sub-groups change over time?
	PEQ 31	How did applicants find the experience of applying for support? What was the scale of the burden on applicants and perceptions of the application process?
	PEQ 32	Did end-beneficiaries that needed an intermediary to apply on their behalf experience any challenges with accessing the support?
	PEQ 33	What were the key reasons for seeking support from the call centre and how effective did applicants find the support?

Contribution claims were then developed as part of the scoping stage and refined as part of the stage 2 evaluation plan process. The contribution claims are listed in the table below, these answer the outcome evaluation questions as indicated in the last column of the table.

Table 2 Contribution claims

Outcome Theme	Contribution	Description	Outcome Evaluation questions[3]
Household concern	HCC1 (Intermediate contribution Claim)	The schemes contribute to lowering households' level of concern about energy bills and household finances.	OEQ 9: How did the level of concern about energy bills vary before and during the interventions? OEQ10: How did the level of concern about household finances more broadly vary before and during the interventions?
Household consumption	HC1	Schemes contribute to the ability of eligible households to maintain energy consumption at a safe and comfortable level, while limiting the use of other harmful mitigation strategies[4].	OEQ1: How have households adapted their energy consumption and wider spending behaviours because of the rise in energy costs? What impact, if any, have the energy affordability schemes contributions had on these behaviours? OEQ2: To what extent did households maintain consumption at a safe / comfortable level? How did maintaining safe consumption affect other essential spending? What impact, if any, have the interventions had on households' ability to maintain consumption at a safe / comfortable level?
Household consumption	HC2	Schemes contribute to the ability of low-income households, or those classified as fuel poor, to limit energy underconsumption.	OEQ3: What was the extent of underconsumption? How did this differ between key sub-groups, including between those classified as fuel poor and not fuel poor? What impact, if any, have the energy affordability schemes intervention had on limiting underconsumption?
Household consumption	HC3	The schemes help limit the scale and duration of PPM household self-disconnection from energy suppliers.	OEQ4: What was the scale of households disconnecting from their energy supply? What impact, if any, have the interventions had on the scale of households disconnecting from their energy supply?

[3] OEQ1,3, 9 were addressed across contribution claims. OEQ1 and OEQ3 regarding scheme perception were addressed in the process evaluation.
[4] Harmful mitigation strategies are reducing spending on necessities (e.g. food, essential clothing, medicines), reducing other spending (e.g. holidays, meals out, days out), struggling to pay other housing costs or bills and taking on household debt/taking on more household debt (e.g. taking out loans, borrowing more, using more credit).

Household finances	HF1	The schemes contribute to limiting the number of households that would not be able to pay their energy bills and who go into energy debt with their supplier.	OEQ5: How many and what proportion of accounts were in arrears throughout the scheme? How does this compare to previous trends? What is the total scale of energy debt and the average amount of debt?
Household finances	HF2	The schemes contributed towards limiting the increase in the proportion of households experiencing fuel poverty	OEQ6: During the interventions, what was the proportion of households whose income after housing costs fell below a threshold indicating potential fuel poverty? How does this compare to the equivalent period last year? How easy or difficult has it been for households to afford their energy bills in general and before the interventions?
Household finances	HF3	The schemes limited increases in household borrowing and cuts in other essential spending (e.g. food, essential clothing, medicines) and savings.	OEQ7: Household saving and borrowing: How did household saving and borrowing rates vary before and during intervention delivery? OEQ8: To what extent did households maintain consumption at a safe / comfortable level? How did maintaining safe consumption affect other essential spending? What impact, if any, have the interventions had on households' ability to maintain consumption at a safe / comfortable level?
Health and Welfare	HW1	Schemes limit increases in the instance of cold-related illnesses and mould in dwellings that can arise from under-heating	OEQ11: Bearing in mind contextual factors, how did the level of cold-related illnesses and instances of mould in dwellings over the intervention period vary compared to previous years?
Energy Supplier	ES1	Schemes limit the risks of energy supplier insolvencies through keeping customer debt levels low and delivering the schemes in a way that helps smooth cashflow fluctuations.	OEQ12: Did all suppliers stay solvent over the course of intervention delivery? Were any suppliers at risk of insolvency? OEQ13: What, if any, distortions to the market occurred over the course of intervention delivery?

		OEQ14, OEQ15 and OEQ16 were addressed across contribution claims	OEQ14: What were the perceptions of the stakeholders on the appropriateness and scale of the interventions (i.e. universality and value)? OEQ15: How did perceptions vary by different sub-groups of the bill-payer population and across the interventions? OEQ16: What was the scale and nature of changes in payment type, including the scale of household movement to pre-payment meters? How did the interventions affect these changes, if at all?

1.4 Evaluation development and scoping

The evaluation plan was developed following a series of scoping activities, these were:

- A desk review: a familiarisation exercise which involved a review of policy documents, including the Business Case and Programme Delivery Plans. The aim was to understand the rationale for each energy affordability scheme, and the processes by which they expected to deliver intended outputs, outcomes, and impacts. This work informed the development of the Theories of Change (ToCs). More information about the development of the ToCs, and the contribution story is available in Annex B.
- Scoping Interviews: to understand each energy affordability scheme, the evaluation team undertook interviews with 12 stakeholders involved in the design and delivery of the different energy affordability schemes. Interviews focused primarily on the following thematic areas:
    - Rationale for the energy affordability schemes;
    - Anticipated intervention-level outcomes and impacts, how they were expected to arise, and key risks and assumptions;
    - Key delivery processes and the criteria against which they were measured; and
    - Available management information.
- A data review: A review of relevant data also took place to further inform the development of the evaluation framework and the overall approach. These covered:
    - Secondary data sources that could provide data for the evaluation; and
    - Monitoring and management information which was used to assess the efficiency and effectiveness of delivery processes.

Following learning from the scoping stage, an evaluation plan for stage 1 was developed, which detailed the approach and methods that would be used to conduct this stage of the evaluation. A review of the evaluation design based on the stage 1 evaluation findings was then undertaken to set out a refined approach for stage 2. This built upon the initial evaluation plan, using all the learning from stage 1 to amend and improve the stage 2 evaluation plan.

1.5 Process evaluation approach

The process evaluation reviewed the efficiency and effectiveness of processes established to deliver the energy affordability schemes. The scoping phase made clear the importance of the process evaluation having a formative function, as although the schemes were not implemented after winter 2022/23, the need for shared learning and opportunities for ‘course-correction’, as well as providing DESNZ with useful learning for the delivery of future interventions was recognised.

The processes used to deliver the schemes were identified through documentation review and stakeholder interviews and set out for each scheme in 'process maps'. These process maps complement and add value to the ToCs as they describe the detailed flow of work, and role of stakeholders, to deliver the schemes. These can be found in the process findings chapter of the main report. They illustrated the schemes' governance architecture, and the roles and responsibilities of various stakeholders involved in decision-making and delivery processes as well as dependencies between processes. Using qualitative interviews, survey evidence and monitoring data, the process evaluation explored both subjective perceptions and objective details of the ways the energy affordability schemes were delivered. It examined the awareness, understanding, perceptions and experience of the interventions among different recipient groups and stakeholders against how it was expected they would function. The process evaluation assessed the following key factors related to the delivery of the schemes:

Table 3 Process evaluation key factors

Stage / process group	Types of delivery activities covered
Scheme design, set up and communications	Scoping work conducted by DESNZ before the interventions, drafting and finalising the business cases, launching guidance for local authorities and energy suppliers, and communications to increase awareness
Contracting and revisions	Setting up the contracts with local authorities, energy suppliers or scheme administrators and the transfer of funds to them
Delivery of payments	Facilitation of the payments from local authorities and energy suppliers to beneficiaries
Compliance, assurance and audit of schemes	Checks and assurance processes to ensure local authorities and energy suppliers deliver the interventions as expected
Final reconciliation and scheme closure	End of scheme reporting and comparison of actual vs. estimated costs for delivering interventions
Household perceptions towards and experience of schemes	Opinions and beliefs of households on the necessity of the interventions, and their experience of applying for them (where applicable) and receiving them
Stakeholder experiences of the schemes	Opinions and experiences of energy suppliers, local authorities, scheme administrators, and experts in vulnerable consumers on the necessity of the schemes and their delivery (where applicable)

1.6 Outcome evaluation approach

The outcome evaluation used a theory-based approach to examine how the energy affordability schemes contributed towards their intended outputs and outcomes. The unique context within which the schemes were launched, and the universal nature of the intervention informed the overall evaluation approach. The energy affordability schemes were launched at pace following a period of extreme disruption, resulting from COVID-19, structural changes in domestic energy consumption as remote working patterns settle, as well as the Russia's invasion of Ukraine, with widely publicised inflationary pressures exacerbating these structural changes. This meant that any interpretation of change observed over time required close attention to the broader context and the external drivers of change that might offer alternative explanation for any change observed. This was particularly difficult as all energy affordability schemes were implemented prior to the evaluation work taking place.

1.6.1 Other evaluation approaches considered

A range of different evaluation approaches were considered as the principal method during the scoping phase of this evaluation, the table below outlines each approach, the pros and cons of each method and why it was ultimately rejected as the chosen approach. Contribution analysis was chosen for its strengths in bringing together disparate sources and arriving at an overall judgement on plausibility of contribution to observed impacts, given the complexity of the energy affordability schemes interventions and the fast-changing context within which they were delivered.

Table 4 Alternative evaluation approaches

Approach	Description	Pros	Why excluded
Realist evaluation	Used to understand what works, for whom, how, and under what circumstances, including what it is about the intervention that has generated the desired results in particular contexts. It depends upon the collection of data on how the programme has worked differently for different groups and under what contexts – it therefore relies upon data on cases or data stratified by groups.	Useful in instances where the causal links are unclear or several possible causal mechanisms may be in play, or where variation in results in different contexts is anticipated. It is useful when an intervention anticipates high variation between beneficiaries in how they receive and benefit from an intervention (and it is desirable to the evaluation commissioner to understand why).	The energy affordability schemes reached a very high number of individuals, it was not feasible to investigate scheme effects over a small number of known groups who could then be generalised to the population. At the scoping phase, there was also not sufficient detail at the household and delivery partner level of expected behaviours and how these interplay with the Theory of Change. This would have made it challenging to develop draft effective CMO statements for testing.
Process tracing	Used to (1) facilitate and provide methodological steps for mapping out detailed causal hypotheses; and (2) testing whether different pieces of evidence prove, support, refute or completely disprove the causal hypothesis.	This can be a useful method for gathering detailed and credible evidence for causal hypothesis when investigating a small number of causal mechanisms. Process tracing is also a useful method for case-based investigation of causal hypotheses.	There was a large number of causal mechanisms at play, and schemes were undertaken within a fast-changing context. At the study outset, some specific household groups of interest were identified by DESNZ, however other groups of particular interest were identified iteratively over the course of the study. This meant that a structured case-based

Approach	Description	Pros	Why excluded
		Process tracing tests are widely accepted as a robust framework for narrowing down the value and quality of evidence as necessary and/or sufficient (or not) to support conclusions on strength of evidence for causality.	approach using process tracing could not be developed at the outset. Finally, this approach provides greatest value where there is a variety of data types available (through different modalities, e.g. observations, self-reported, authoritative, experimental); which was not the case for the energy affordability scheme outcome evaluation.
Qualitative Comparative Analysis (QCA)	An approach to identifying the most common combination of factors associated with outcomes (including both policy levers and external factors)	Pragmatic method to identify groups of causal factors post hoc. Works based in cased-based studies with samples of between 15 to 50.	This method is suited to smaller sample sizes rather than for a large population level intervention, given the resource-intensive data collection necessary for each case. There are also some risks associated with not accounting for missing data. The Boolean formula underpinning QCA does not cope well with missing data. A separate QCA study and analysis has to be run separately for each individual outcome. There is a high resource intensity of running multiple QCA studies to assess all outcomes of interest given size of the energy affordability scheme interventions.

Approach	Description	Pros	Why excluded
Bayesian updating	Extension of other methods like Process Tracing and Contribution Analysis by assessing probabilities of a policy/programme hypothesis being true given the existence of a piece of evidence. Bayesian updating can increase transparency of evaluators' prior beliefs in a causal hypothesis, and how collected evidence updates these beliefs.	Useful where causal claims are not directly observed or measured, making them difficult to test. Also, useful where evidence quality is variable. Stakeholders can be included in judging strength of evidence that supports contribution claim. Can be combined with contribution analysis to strengthen the method.	Numerical estimates of the probability of observing different strands of evidence could be subjective and open to misinterpretation. More intuitive forms of analysing and presenting results of contribution analysis exist. This is resource intensive, and scale of work can quickly escalate. This was considered a particular risk when considering the energy affordability scheme ToCs as there would have been multiple outcomes and causal pathways to test across the different schemes.
Most significant change	Participatory monitoring and evaluation method used in complex interventions. Involves the collection of significant change stories coming from stakeholders in the field.	Particularly useful when there is a need to understand different stakeholders' views on the aims of programme, how to implement it and success factors. Builds understanding and focus across teams and stakeholders.	As a participatory research method this would have required ongoing deliberative engagement with stakeholders, with cycles of review to iterate stories. This was deemed to be a time consuming and resource intensive method which would demand a high level of respondent engagement. This approach was also considered inappropriate given the scale of energy affordability schemes and the range of stakeholders that would have needed to be consulted.

Approach	Description	Pros	Why excluded
Experimental Methods – Randomised Control Trial	Involves providing a robust comparison between one or more groups receiving an intervention (treatment group) and a group that does not receive the same intervention (control group) through randomly assigning participants to each group.	Ensures there are no observable or unobservable differences (or bias) between the treatment and control, meaning that any differences in measured outcomes between the two groups can be reliably attributed to the intervention, not an unrelated factor.	This was considered not feasible as schemes had largely already been implemented at the outset of the evaluation, were near universal schemes and random allocation was not practical (and introduces ethical concerns).
Quasi-experimental Methods e.g., Regression Discontinuity Design, Difference-in-Difference, Propensity Score Matching etc.	Similar in aims to RCT in terms or estimating net-impacts between treatment and control groups.	Can be used when not feasible to randomly allocate participants to different groups, but a comparison group of households not receiving intervention but otherwise similar can be identified or synthetically created.	No suitable comparison group was available given the universal nature of the schemes. Whilst not all schemes were launched at the same time (e.g. AFP schemes were launched c6 months after the main EPG support), this couldn't be exploited given the substantial differences in characteristics between the two schemes. Wider empirical literature to understand the effects of energy retail prices on some outcomes of interest exploits variations in tariff types or heating fuel[5]. However, the UK energy markets lack sufficient variation in retail markets between fuel types and regions, and no longitudinal panel dataset of households including their tariff type was available for this work.

[5] See for instance relevant research in the US: Ahmed, Ahmed I., Robert S. McLeod, and Matej Gustin. "Forecasting underheating in dwellings to detect excess winter mortality risks using time series models." Applied Energy 286 (2021): 116517.

1.6.2 Conducting contribution analysis

To examine the outcomes of the energy affordability schemes, a contribution analysis (CA) was conducted. A contribution analysis aims to understand the contribution a policy or programme has made to the observed outcomes and impacts. It belongs to the group of theory-based evaluations, which are based on testing evaluators' assumptions or theory of how change is expected to come about following an intervention.[6] Contribution analysis can also be used to help explain how and why interventions are working, and for whom[7].

Specifically, contribution analysis assesses evidence supporting the contribution of a programme to outcomes or impacts of interest. Contribution claims are listed within a contribution analysis framework and are reviewed against different sets of data and systematically categorised as to whether they support or refute the causal claim and the strength of evidence.

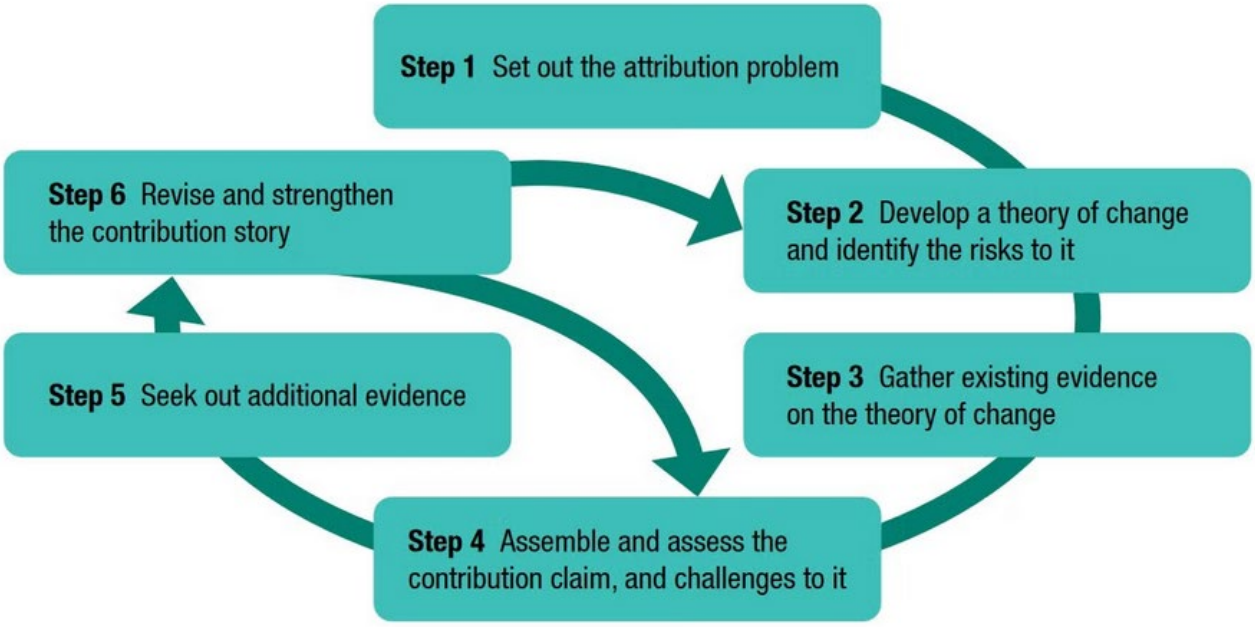
As a method of assessing evidence, contribution analysis allowed evaluators to:

- Establish a nuanced understanding of whether critical pathways set out in the Theory of Changes (ToC) materialised, and if not, why. This came through testing causal assumptions (by gathering data to support or refute them) and refining hypotheses as to whether and how the schemes generate (desired) impact. These refined hypotheses then generate a more evaluable framework for the impact evaluation.
- Draw on a mix of qualitative and quantitative evidence the support or refute the Theory of Change.
- Investigate alternative hypotheses that might explain the outcomes.

The contribution analysis undertaken sought to understand how and why the schemes may have, or have not, influenced outcomes. As elaborated by White (2009) and illustrated by Apgar et. al. (2020) a rigorous TBE is based on six key steps[8].

[6] See HM Treasury (2024), The Magenta Book, Chapter 3.
[7] Mayne, J (2001). 'Addressing Attribution through Contribution Analysis: Using Performance Measures Sensibly', Canadian Journal of Program Evaluation 16.1: 1–24; Mayne, J (2008). Contribution Analysis: An approach to exploring cause and effect. Brief 16, Institutional Learning and Change (ILAC) Initiative. Mayne, J. (2019). Revisiting contribution analysis. Canadian Journal of Program Evaluation, 34(2), 171–191.
[8] White (2009). Theory-based impact evaluation: principles and practice. International Initiative for Impact Evaluation. 3ie Working Paper 3

Figure 1 Contribution Analysis steps



Source: Apgar, M., Hernandez, K. and Ton, G., 2020. Contribution analysis for adaptive management. Briefing Note.

During stage 1 of this evaluation, scoping work with DESNZ delivery teams and a review of scheme business cases, monitoring data and wider literature was undertaken to set out the causal problem. Theory of Change diagrams were developed for each energy affordability scheme to understand the causal problem and model how the intervention was expected to achieve its outcomes[9] (steps 1[10] and 2). These are models of generative causality, showing the steps that occur between some deliberate actions of an intervention and subsequent observed changes, and the assumptions needed for the steps to occur. Based on these Theory of Change diagrams, a contribution story was assembled. The evaluation team then collected data on the energy affordability schemes as part of stage 1 of the evaluation, which generated insights into how the intervention was delivered and the outcomes observed (step 3).

The large amount of data collected during stage 1 of the project enabled the evaluation team to gain insights into how each energy affordability scheme was delivered, whether the causal links and assumptions held true and what risks had materialised (step 4). This enabled the

[9] Weiss, C.H. (1995) 'Nothing as Practical as Good Theory: Exploring Theory-Based Evaluation for Comprehensive Community Initiatives for Children and Families', in J. Connell, A.C. Kubisch, L.B. Schorr and C.H. Weiss (eds*), New Approaches to Evaluating Community Initiatives: Concepts, Methods, and Contexts,* New York NY: The Aspen Institute

[10] Step 1 was completed as part of the scoping stage of the study. It consisted of a desk review of existing programme documentation and literature, a data review and 12 scoping interviews with stakeholders who were involved in the design and delivery of the intervention such as the delivery leads for the energy affordability schemes. These activities built an understanding of the scheme rationale, the expected outcomes and impacts of the schemes and allowed evaluators to explore the theory and assumptions underpinning this. Following this, series of Theory of Change workshops with experts for each scheme (such as DESNZ policy team members) then took place to develop individual scheme Theory of Change diagrams and to test and develop the evaluation framework. The evaluation framework for the contribution analysis was then developed based on the findings from the scoping activities. This was then reviewed by an external expert and DESNZ

team to (i) reassess the strengths and weaknesses of the contribution story, (ii) review the strength of the ToC, (iii) identify areas for further data collection (if the evidence is weak). Based on this evidence, the evaluation team then revised some of the critical causal pathways, assumptions, and risks underpinning the ToCs. During stage 2 of the evaluation, additional evidence was be collected (step 5) to further strengthen the credibility and undertake final revisions to the ToC and contribution story (step 6). This final step brought together analysis against a set of single statements of the schemes' contribution to observed outcomes (contribution claims), providing an assessment of how much the energy affordability interventions contributed to ToC critical pathways and overall progress towards desired outcomes. To ensure this joined-up robust analysis, meetings between evaluation team members working on evidence streams and with DESNZ were conducted to discuss emerging findings.

Contribution Claims

HCC1: The schemes contribute to lowering households' level of concern about energy bills and household finances. This is not an outcome in its own right but a pathway to achieving further outcomes

HC1: Schemes contribute to the ability of eligible households to maintain energy consumption at a safe and comfortable level, while limiting the use of other harmful mitigation strategies.

HC2: Schemes contribute to the ability of low-income households, including those classified as fuel poor, to limit energy underconsumption.

HC3: The schemes help limit the scale and duration of PPM household self-disconnection from energy suppliers.

HF1: The schemes contribute to limiting the number of households that would not be able to pay their energy bills and who go into energy debt with their supplier.

HF2: The schemes contributed towards limiting the increase in the proportion of households experiencing energy burden and therefore likely to be experiencing fuel poverty

HF3: The schemes limited increases in household borrowing and cuts in other essential spending (e.g. food, essential clothing, medicines) and savings.

HW1: The schemes limit negative mental and physical health impacts arising from increases in energy bill costs (including limiting instances of cold-related illnesses and mould in dwellings that can arise from under-heating).

ES1: The schemes limit the risks of energy supplier insolvencies through keeping customer debt levels low and delivering the schemes in a way that helps smooth cashflow fluctuations.

Appraisal framework

In appraising the extent to which the schemes contributed to their different intended outcomes, the evaluation team systematically assessed:

i. Whether there was any change in targeted outcome areas – i.e. whether the positive change which the schemes intended to (help) bring about occurred or not.

ii. Evidence of scheme contribution to observed change – i.e. whether there is agreement of evidence with the hypothesised outcome/contribution.

iii. Prevalence of reported contribution to outcomes (or how widespread the impact was) – this analysis provides some indication of the scale of contribution of the scheme.

iv. Magnitude of reported contribution to outcomes (or how critical the energy affordability schemes were to the outcome materialising across the eligible population) – this analysis provides some indication of the scale of contribution of the scheme compared to other potential influences or drivers.

v. Heterogeneity of experiences or outcomes across households, which considers who are more or less likely to report positive outcomes aligned with the hypothesised contribution. This dimension also considered which groups have received sufficient/insufficient support through the schemes, and whether any groups received support they did not need. In this sense, the heterogeneity analysis aligns with the analysis of relative contribution (or additionality) of the scheme, which is a common component of contribution analysis.

vi. Risk of bias of in the findings, given the nature of the evidence and the strengths and limitations of the data collected and the analysis conducted.

The appraisal process

The first dimension of the appraisal involved synthesising findings according to whether there was evidence that agrees with the contribution claim. This included synthesising the findings of direct evidence, such as direct indicators or measures of the contribution of the schemes, and separately indirect evidence that accumulated about mechanisms or channels along the ToC leading to an outcome.

The second dimension concerned the prevalence of the evidence of the claim. This was how often people said government support contributed to an outcome, for instance a minority or majority of the population.

The third dimension was about the magnitude or importance of the contribution. For instance, a minority of the respondents indicate the contribution of government support was critical for an outcome materialising and a majority suggest that the contribution is more subtle.

The fourth dimension considered the heterogeneity in reported experiences and outcomes. This considered who were more, or less, likely to report positive outcomes aligned with the contribution claim. This also considered, issues highlighted in the process evaluation and survey evidence about individuals' awareness of the programme.

The fifth dimension involved a critical appraisal of the risk of bias of the evidence underlying the evaluation and its findings. This required understanding factors that increase confidence in

the underlying evidence and those that would limit or decrease confidence in the evidence. Delahais and Toulemonde (2017)[11] provide some key examples of reasons why we might be confident in the underlying findings, i.e. derives from authoritative source, convergent triangulated sources, and there is consistent chronology. In addition, Copestake et al. (2017)[12] highlight that evidence drawn from unprompted questioning about a programme can increase confidence in findings, helping to mitigate concerns of confirmation bias (see Table 5 below). Factors that limited our confidence concern whether alternative explanations determine the pattern of results or outcomes. This included other confounding contextual factors and interventions, or equally be due to the type of evidence available.

For the critical appraisal (or risk of bias) of the findings, the evaluation has considered both the strengths and weaknesses of the evidence and analytical approach. This has included consideration of: **source credibility** (i.e. whether the most important / expert sources have been consulted and whether evidence captured with these groups covers the most relevant themes), **sample representativeness** (i.e. whether the base coverage is sufficient to provide robust indications), **evidence coverage** (i.e. whether the evidence collected covers all aspects of the causal hypothesis, or whether there are some information gaps remaining), **temporal coverage** (i.e. whether the evidence has been collected at the most relevant timepoint - when an anticipated change would have been expected to occur, or only at the prior point when inferences and assumptions only can be drawn; and also the reliability of baseline data), **evidence convergence**[13] (i.e. whether, when triangulated, evidence from different sources indicates the same, similar, or complementary findings/conclusions, or whether there is divergence; and whether, if there is divergence, this can be explained logically in terms of the different perspectives / experiences / backgrounds of the stakeholder / the written source to build up a credible causal story), **evidence plausibility** (i.e. taking the causal argument indicated by the evidence, whether the evidence appears plausible given what is known in general or proven in the literature about the contextual landscape and behaviours), **respondent bias** (i.e. whether there is a risk that any of the groups consulted would have been more/less likely to respond in a specific way due to the design of the survey), **recall challenges** (i.e. whether the respondent would have been likely or not to recall past situations (near-) accurately), and **optimism bias** (i.e. whether the analysis sufficiently considers alternative explanations, other than the intervention, for change observed).

[11] Delahais, T., & Toulemonde, J. (2017). Making rigorous causal claims in a real-life context: Has research contributed to sustainable forest management? Evaluation, 23(4), 370-388.
[12] Bath Social & Development Research Ltd (2017) BSDR Briefing Paper: QuIP
[13] This aligns with Delahais and Toulemonde (2017)'s approach to categorising provide some examples of evidence types by 'confidence level' – i.e. evidence derived from authoritative source - a piece of evidence which has already passed a thorough test under the responsibility of credible authorities in so far as the point at issue is not in dispute, convergent triangulated sources. or consistency in the chronology of an intervention and a sequence of change. See: Delahais, T., & Toulemonde, J. (2017). Making rigorous causal claims in a real-life context: Has research contributed to sustainable forest management? Evaluation, 23(4), 370-388.

Table 5 Dimensions of appraisal

Dimensions of appraisal	Criteria
Agreement of evidence with claim: Is evidence consistent with the hypothesised Theory of Change/ contribution claim?	Direct evidence: Synthesis of evidence that agrees or disagrees with contribution claim. Indirect evidence from Theory of Change channel: Synthesis of evidence that agrees or disagrees with channels leading to outcome in theory of change.
Prevalence of claim: What is the prevalence (how often) of the evidence of this claim? How common are expected beneficiaries reporting it contributes to the outcome?	Small Minority: 0 – <25% of respondents Minority: 25 – <50% of respondents Majority: 50% – <75% of respondents Vast Majority: 75% – 100% of respondents
Magnitude: What is the suggested magnitude or importance of the claimed contribution to an outcome occurring?	Critical contribution (or large effects): Important contribution (or medium effects): Subtle contribution (or small effects):
Heterogeneity: To what extent do experiences or outcomes differ across respondents (i.e. extent of heterogeneity)?	Synthesis of findings from different sources of evidence about variation in responses or experiences.
Critical appraisal (risk of bias): To what extent are we confident in the evidence (i.e. that there are no other explanations for findings?)	**Source credibility**: how relevant or expert are the sources consulted? **Sample representativeness**: is the sample sufficient to provide robust indications? **Evidence coverage**: Does the evidence cover all aspects of the causal hypothesis or are there gaps? **Temporal coverage**: Does the data include the relevant time period/s? **Evidence convergence**: Does evidence from different sources indicate similar conclusions? **Evidence plausibility**: Does the evidence align with what is already known or proven in the literature?

	Respondent bias: Is there a risk that any group would be more or less likely to respond a certain way? **Recall challenges**: How likely is it that respondents can recall the past accurately? **Optimism bias**: Does the analysis consider alternative explanations than the hypothesis?

These 5 dimensions are considered in the appraisal of contributions in Chapter 8 of the main report. We have included a summary box indicating whether the assessment is weak (one ✓) medium (two ✓✓) or strong (three ✓✓✓).

In addition we considered the following dimensions of reasoning for critical appraisal as set out in Table 6 below.

Table 6 Types of reasoning for critical appraisal

Types of reasoning for critical appraisal	Description
Authoritative source	An 'authoritative source' is a piece of evidence which has already passed a thorough test under the responsibility of credible authorities in so far as the point at issue is not in dispute.
Convergent triangulated sources	Properly triangulated sources are independent from one another, as they stem from stakeholders having different vested interests. Pieces of evidence originating from such sources are mutually reinforcing as far as they converge.
Consistent chronology	Chronology alone is never a sufficient argument for confirming a contribution, but it may be used for refuting an assumed contribution.
Unprompted evidence	This is evidence drawn from qualitative techniques that ask respondents about factors impacting outcomes. If respondents mention an intervention without them being directly prompted by interviewers about it, then this can provide credible evidence of it having a notable contribution. This aims to address confirmation bias.

1.7 Evaluation analysis approach

1.7.1 Data synthesis and triangulation

To triangulate evidence, the evaluation team created a mixed-methods evidence matrix, which mapped different types of data from multiple sources, such as interviews, surveys, or secondary data, against individual contribution claims and evaluation questions. A mixed methods evidence matrix is a tool used to integrate and synthesise different types of data and provides a systematic framework for organising, comparing, and analysing data. The matrix consisted of columns representing different data sources and rows for each evaluation question. For each stage of the evaluation, we used the evidence matrix to bring all the relevant data together, the evaluation team's interpretation of evidence was also tested through a validation workshop with DESNZ teams at each stage of the study.

1.8 Methodology Limitations

As with any evaluation approach, there are some limitations with the methodological approach, which are summarised below (it should also be noted that some methodological limitations are discussed in individual methods reports e.g. in Annex C):

1.8.1 Primary Research Limitations

The strength and coverage of primary evidence varied across energy affordability schemes. Ipsos survey data covered all schemes, and survey group sample sizes were substantial, but some demographic groups were too small to offer reliable disaggregated results.[14] In addition, the research was not able to produce quantitative estimates of three relevant subgroups of the GB population, either because they represent a very small proportion of the broader UK population (so very few were identified in the KnowledgePanel surveys), because they were not aware of their status/eligibility, or because of a lack of sample frames for these groups. These were:

- **Non-applicants who were eligible for EBSS AF:** There is no single sampling frame for those who have no direct relationship with a domestic energy supplier. Although some non-applicants eligible for EBSS AF were interviewed during the nationally representative household survey, there were very few identified given the low incidence of this group in the general population. In addition, qualitative research with EBSS AF non-applicants (who may have been eligible for the scheme) could not be completed due to issues identifying and reaching these households.
- **Households who had not received the pass-through of EPG or EBSS GB from intermediaries:** The KnowledgePanel survey was able to identify a small number of households who do not pay directly for their energy but due to recall issues; lack of awareness of the schemes; and lower incidence of the group in the general population,

[14] The report highlights all instances where survey results are drawn from limited sample sizes.

it was not possible to generate a reliable estimate of the extent to which this occurred. Some qualitative interviews were conducted with those without a direct relationship to an energy supplier and this evidence is included in the reporting, supplemented by research with experts in vulnerable groups and those in care homes and their families.

- **Heat Network households who were expected to receive support via pass-through of the non-domestic schemes:** Households living in properties connected to heat networks were expected to have received a discount on their energy bills via their heat network supplier through the Energy Bills Relief Scheme and the Energy Bills Discount Scheme. Although not part of the original evaluation plan, it was expected that this research would identify heat network households in sufficient numbers to estimate the level to which heat network end consumers had received a discount on their energy bills. However, there were several challenges to this, similar to the other subgroups discussed above. Not only are there no established sampling frames of heat network consumers, and this group is a low proportion of the GB population, but previous research designed specifically for these consumers shows that there is low awareness by householders that they are on a heat network.[15] In combination with potential recall issues and a lack of accurate bill reporting, it was decided by DESNZ that estimates of pass-through to this group might not be reliable.

There was also variable quality and coverage of some household survey responses, including a high number of 'n/a' responses for certain questions, and interviewees often struggled to point to contributions of individual schemes under the household consumption, health and wellbeing, and household finance themes. Findings from the qualitative interviews and quantitative surveys (conducted between summer 2023 and summer 2024) also depended on respondents' recall regarding their energy consumption patterns, health and wellbeing, wider spending behaviours before the launch of energy affordability schemes (at wave 1), and the influence of energy affordability scheme payments had on these areas.

1.8.2 Secondary Data and Modelling Limitations

Much of the analysis in the interim outcome evaluation relies on comparisons between winter 22/23 and previous years. Year-on-year comparisons are complicated by shifts in domestic consumption patterns (due, for example, to COVID-19 lockdowns and increased levels of working from home). Finally, not all secondary sources offered temperature-adjusted data, and secondary data sources consulted for this evaluation also pointed to important scientific limitations of the temperature adjustment method.[16]

The study team on this evaluation also modelled the price elasticities of demand to understand how energy affordability schemes affected energy and non-energy consumption during the intervention period. There are several limitations related to data available for this evaluation,

[15] DESNZ (2023) Heat network consumer and operator survey 2022, showed that c.20% of householders misidentified themselves as not being on a heat network when the administrative dataset confirmed that their building was registered as on a heat network

[16] For further information on these limitations, please refer to: McKenna et al (2023). 'Smart Energy Research Lab: Energy use in GB gas heated domestic buildings during the 2022/2023 heating season'.

availability these are explored further in Annex C: Supplementary Research. The forthcoming impact and economic evaluation for these schemes will use additional and more granular data to build upon the modelling presented in this report.

Finally, it should be noted that this study was not intended to deliver a counterfactual impact evaluation. The universal nature of the energy affordability schemes makes finding a control, or comparison group difficult, particularly as the intervention has already been delivered. Whilst not all schemes were launched at the same time (e.g. AFP schemes were launched c5 months after the main EPG support), this couldn't be exploited given the substantial differences in household characteristics between the two schemes. Wider empirical literature to understand the effects of energy retail prices on some outcomes of interest exploits variations in tariff types or heating fuel[17]. However, the UK energy markets lack sufficient variation in retail markets between fuel types and regions, and no longitudinal panel dataset of households including their tariff type was available for this work.

[17] See for instance relevant research in the US: Ahmed, Ahmed I., Robert S. McLeod, and Matej Gustin. "Forecasting underheating in dwellings to detect excess winter mortality risks using time series models." Applied Energy 286 (2021): 116517.

Annex A2 Survey technical report and quantitative analysis

2.1 Introduction

This annex provides an overview of the quantitative survey methodology used in the evaluation of the domestic energy affordability schemes. Quantitative research was conducted via online household surveys across two waves. The sample for the wave 2 surveys included the same participants from wave 1 to enable a longitudinal assessment of how their behaviours and situations changed and the reasons for this. For example, in the first wave, it was possible to identify participants who had underheated, gone into debt or reduced spending on necessities due to energy costs, and wave 2 explored whether these issues persisted or had improved.

The surveys covered each of the five energy bills support schemes launched in 2023: the Energy Price Guarantee (EPG); Energy Bills Support Scheme (EBSS); the Energy Bill Support Scheme Alternative Funding (EBSS AF); the Alternative Fuel Payment Scheme (AFP); and the Alternative Fuel Payment Scheme Alternative Funding (AFP AF). The survey content was designed to be broadly consistent across intervention groups to enable comparison of key measures. Not all questions were relevant to all groups, which was accounted for with survey routing, assuming a maximum survey length of 20 minutes per intervention. To account for the different target populations of the schemes, two different survey approaches were used.

Nationally representative survey of GB households

As the EBSS and EPG schemes were applicable to the majority of households in Great Britain, a nationally representative design was used, using Ipsos' random probability online panel, KnowledgePanel. Panellists to the KnowledgePanel are recruited using random probability un-clustered address-based sampling, the gold-standard in survey research. This means that every household has a known chance of being selected to join the panel. Crucially, members of the public who are digitally excluded are provided with a tablet, email address, and limited internet access to allow them to take part in surveys. The wave 2 survey invited all KnowledgePanel panellists who completed the survey in wave 1 who had remained on the panel.

Table 7 KnowledgePanel sample sizes and fieldwork dates

Wave	Wave 1: 28th July – 16th August 2023	Wave 2: 14th March - 20th March 2024
Sample Size	7,850	6,874

Survey of EBSS AF, AFP, and AFP AF populations

While a small proportion of EBSS AF, AFP and AFP AF households were interviewed in the nationally representative KnowledgePanel survey, the incidence was anticipated to be too low to yield robust sample sizes. Due to this, a separate survey was conducted among a representative sample of each recipient group,[18] stratified by region, via a push-to-web approach. The recruitment approach for push-to-web involves inviting participants to take part in an online survey via a letter to their home. The letter provides participants with a unique ID which allows them to log into the survey and submit a response. This prevents duplicate responses across households, and since all routing is managed by the script this method also reduces the chance of participant error in survey completion. To capture the views of the digitally excluded, participants were also offered the option to complete the survey by telephone. The majority of the interviews were completed online, with only a small number conducted by telephone. In the first wave 145 respondents chose to complete the survey by telephone, and 44 surveys were completed by telephone in wave 2.

In wave 1 the sample was selected based on sample frames provided by DESNZ of successful recipients of EBSS AF and AFP AF, and those eligible for AFP (based on their postcode). In wave 2, the sample consisted of all respondents who had completed the surveys and agreed to be re-contacted for a second wave. Sample sizes and fieldwork dates are as follows:

Table 8 Alternative scheme populations sample sizes and fieldwork dates

Scheme	Wave 1: October 30th – December 21st 2023	Wave 2: 5th April - 21st May 2024
EBSS AF	4,056	1,310
AFP AF	5,099	2,123
AFP	3,803	1,274

Questionnaire

The questionnaire was formed of a series of modules intended to cover key areas relevant to the evaluation. The survey had a longitudinal design to allow for both inter-wave and intra-wave analysis. It also featured some key questions which gathered comparative responses

[18] The term 'recipients' of the EBSS AF, AFP AF, or AFP schemes in this context refers to those identified by DESNZ as successful applicants for the EBSS AF and AFP AF schemes, and those located in eligible postcodes for the AFP scheme. The survey itself included verification questions regarding the respondent's awareness of receiving the scheme. A minority of respondents noted that they did not receive or could not remember. Therefore, questions concerning the receipt process were only posed to those who confirmed they had received the scheme. We also asked respondents to provide self-reported reasons for not receiving the scheme to better understand these occurrences.

from households regarding their experiences during two consecutive winters (2022-2023 and 2023-2024). Some of the questions were behavioural, asking participants to describe whether or how they had changed their usual activities in response to higher energy bills or in response to the support schemes. Attitudinal questions asked participants to provide their opinions on various subjects, while a smaller number of questions were knowledge-based and asked participants about their level of awareness of the schemes. The questionnaire additionally included demographic questions to enable subgroup analysis. The push-to-web versions of the survey of EBSS AF, AFP AF and AFP households and Knowledge Panel survey of GB households can be found the appendices at the end of this document. Materials. Further information on the questionnaire design and development can be found in Section 2.2.

Sampling

Each survey had a different sampling approach, described in detail in Section 2.3 and summarised below.

- The sample for the survey of GB households, reaching primarily EBSS and EPG populations using Knowledge Panel was stratified by country and education. A total of 16,131 panellists in Great Britain (aged 16+, one per household) were selected and invited to take part in the survey. The sample was subsequently weighted to ONS statistics on gender, age, region, education, ethnicity, index of multiple deprivation (quintiles), and number of adults in the household. For wave 2, all respondents who completed wave 1 and remained on the panel at the time of wave 2 were invited to complete the survey.
- The samples for the AFP AF and EBSS AF surveys were drawn from recipient sample files provided by DESNZ, containing the names and addresses of all successful scheme applicants. The sample was stratified by Local Authority in order to match the regional distribution of the sample files. Sample boosts were applied for some recipient groups, such as houseboats, tenants (council association), households served by heat networks, travellers and farmers, aiming to achieve a minimum sample size of 200 interviews with each group to allow for separate analysis. For wave 2, all respondents who completed wave 1 and agreed to be re-contacted for wave 2 were invited to complete the survey.
- For the AFP survey, an applicant or recipient sample file was not available. Instead DESNZ provided a list of all postcodes considered eligible for the scheme. A sample of addresses was subsequently drawn using the Postal Address File, stratified to match the regional distribution of the postcodes provided by DESNZ. For wave 2, all respondents who completed wave 1 and agreed to be re-contacted for wave 2 were invited to complete the survey.

Weighting

Weighting was required to reduce the bias in survey estimates and ensure the data is representative of the different populations who took part in the schemes. For the wave 1 nationally representative survey of GB households (primarily covering EBSS and EPG

populations), the data were weighted to the population profile of households in Great Britain. For the wave 1 survey of EBSS AF, AFP AF and AFP households, the data were weighted to the regional distribution of the successful applicant databases (for EBSS AF and AFP AF) or regional distribution of the eligible population (for AFP). For wave 2, a longitudinal weighting design was employed to account for attrition between the two survey waves for each sample. This is outlined in Section 2.5

2.2 Questionnaire development

2.2.1 Questionnaire design

The questionnaire was designed to collect data relevant to the key evaluation questions, informed by the evaluation framework (see Section 1.3) and theory of change for each scheme (outlined in annex B). The questionnaire was developed and refined by DESNZ and the contractor consortium and through cognitive testing. Following the cognitive interviews, further changes were made to the questionnaire to improve its comprehensibility and ensure consistency in interpretation.

The survey was designed using a 'mobile-first' approach, which took into consideration the look, feel and usability of a 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 question loops which are more mobile friendly), and making questions 'finger-friendly' so they are easy to respond to. The questionnaire was also compatible with screen reader software to help those with accessibility requirements.

While the survey covered all five energy support schemes, separate questionnaires were not necessary for each scheme as there was a high level of overlap between the schemes. For efficiency, two questionnaires were developed; one focusing on EPG and EBSS for the nationally representative sample; and one focusing on EBSS AF, AFP AF and AFP for recipients of those schemes. Participants who applied or were eligible for two schemes (EBSS AF and one of AFP AF / AFP) would only be invited to complete one survey, with questionnaire routing directing them to questions relevant to each scheme they had applied or been eligible for.

2.2.2 Wave 1 cognitive testing

After the draft questionnaire was agreed for each survey for wave 1, eleven cognitive testing interviews were conducted to explore how participants interpreted and answered the questions, to ensure the survey was well understood and questions easy to answer. In particular, the cognitive interviews examined the following potential issues:

- Problems with comprehension (e.g. ambiguous terms or unfamiliar concepts);

- Questions which respondents found it difficult to answer because they did not have sufficient knowledge or found it difficult to recall;
- Questions where respondents felt there was a 'right' answer (leading to social desirability bias);
- Respondents including/excluding the wrong things in their answer; and
- Response categories which did not cover the likely range of responses.

The interviews were conducted with both the general population, for whom EPG and EBSS were relevant, and recipients of EBSS AF and AFP AF. Respondents were recruited from a mix of demographics such as gender, age and income (including low and high income households) as well as bill payers and non-bill payers. As the questionnaire contained complex routing, with some questions asked only to those who gave specific answers, not all questions were tested. The interviews also focused on the key evaluation questions for each scheme to test respondents' comprehension, recall, judgement and emotional response and covered overall impressions of the surveys in terms of flow, relevance, and completeness.

All cognitive interviews were carried out online by the core Ipsos research team, using a cognitive testing topic guide with question-specific prompts and probes. This replicated the method of the main survey as close as possible, allowing the team to observe the process a participant goes through when answering the survey. The survey was emailed to participants 10 minutes before the interview commenced (to avoid them studying it beforehand and to ensure spontaneous reactions were captured) and interviewees were asked to do exactly as they would if they were completing it by themselves. The Ipsos team then used a combination of interviewer observation (e.g. noting when the participant looks puzzled or hesitant) and verbal probing when necessary. Interviews lasted up to 45 minutes, and respondents were given £50 as a thank you for participating.

Overall, the survey questions were well understood. There were no major issues regarding recall of the information requested for winter 2022-2023 and interpretation of the hypothetical scenarios which asked respondents to imagine the impact of changes in energy prices had there been no government support for energy bills. There were only a few instances of issues with comprehension or the meaning of different response options. Most of the recommendations involve making minor adjustments to the wording of questions, pre-codes or highlighting broader context that may influence participants' responses. An overview of the issues identified, and changes made to specific questions in the appendices at the end of this document.

2.2.3 Wave 1 survey piloting

As a high number of postal invitations (64,000) were scheduled to be sent out for the push-to-web surveys of EBSS AF and AFP AF recipients and AFP eligible households in wave 1, it was necessary to pilot the surveys by inviting a small number of households to complete the survey prior to the full launch. This was to identify any potential issues with the questionnaire programming which had not been identified during the extensive testing process or technical

issues with the survey website that might cause issues for respondents when attempting to access or complete the survey. An initial sample of 1,200 invitations were sent out, yielding several hundred completes. The data from these initial completes were checked for completeness and accuracy, and the helpline was monitored closely for any reports of technical issues. As no data issues were identified and no technical issues were reported, the full survey was launched one week after the initial pilot. A similar process was followed for the KnowledgePanel survey, although with shorter timeframes due to it being an online survey where invitations are received instantly. An initial 'soft' launch was carried out with several hundred panellists invited to complete the survey. After the panel management team and research team had checked the initial data and identified no issues, the full launch took place the following day.

2.2.4 Wave 2 questionnaire

The wave 2 questionnaire remained broadly similar to wave 1. Questions regarding awareness of schemes were removed, as the wave 2 sample consisted of those who had completed wave 1 who were already familiar with the schemes through the survey itself (although awareness of the energy price cap was introduced in wave 2). Additionally, questions about the experience of the schemes were removed since the schemes were not available in wave 2 (winter 2023/24). New questions in wave 2 included those asking about respondents' electricity suppliers, whether households generate their own energy, perceptions of future energy prices and perspectives on the distribution of government energy bill support, specifically whether it was appropriate to provide schemes to all households rather than focusing on lower-income or vulnerable households. In wave 2, the survey incorporated more detailed follow-up questions to assess the impact of higher energy costs experienced in the past winter compared to the previous winter. For wave 2 of the push-to-web survey of EBSS AF, AFP AF and AFP households, the survey was piloted to an initial sample of 250 email addresses, with full launch five days later after no technical or data issues were identified with the email invitation approach, adopted in wave 2 in response to the pre-election period – covered in Section 2.4.2.

2.3 Sampling

2.3.1 Sample design for nationally representative survey of GB households

This primarily covered the EPG and EBSS populations, using Ipsos KnowledgePanel.

Recruitment to the panel

KnowledgePanel 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 selected addresses in the UK, using the Postcode Address File (PAF), inviting them to become members of the panel. Invited members are able to sign up to the panel by completing a short online questionnaire or by returning a paper form. Up to two members of the household are able to sign up to the panel. Members of the public

who are digitally excluded are able to 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.

Sampling from the panel

The KnowledgePanel is a random probability survey panel. Samples are stratified by education and region to account for any profile skews within the panel. For wave 1, a total of 16,131 panellists in Great Britain (aged 16+, one per household) were selected and invited to take part in the survey. Of these, 7,850 respondents completed the survey – a response rate of 49%. The sample for wave 2 included all of the wave 1 respondents who had completed the survey and remained on the panel.

2.3.2 Sample design for EBSS AF, AFP AF and AFP surveys

For each of the EBSS AF, AFP AF and AFP samples, there was a target of 4,000 completed surveys per scheme in the first wave. With an incentive of a £10 voucher, a response rate of approximately 20% was anticipated, meaning a sample of approximately 20,000 recipient s to each scheme would need to be drawn. An additional 10% was selected as a reserve sample for each scheme (i.e. 22,000 leads selected per scheme).

Deduplication and exclusions

As only one application for each scheme was possible within each household, all cases within each sample were considered to be unique. However, quality checks conducted by Ipsos showed that the EBSS AF and AFP AF sample files contained duplicate addresses (833 and 15,437 respectively). The number of instances per address ranged from 2 to 224. In many cases the address was the same but the recipient name was different, so these may have been different recipients within marinas, caravan parks, traveller sites or care homes. As there was no means of identifying whether duplicate applications within the same address were legitimate or not, the sample was deduplicated only where both the address and the recipient name were the same.

As households could be eligible for both EBSS AF and either AFP AF or AFP, there was a high level of overlap between samples; 19,785 addresses were an exact match between the files, which represented approximately 27% of the AFP AF sample and 16% of the EBSS AF sample. The questionnaire was designed to cover all three schemes so participants only needed to receive a single invitation. To avoid participants being selected in several samples and therefore receiving multiple letters, it was necessary to put in place a process to ensure only one invitation would be received by households who had applied to multiple schemes. Deduplicating between the samples so that each address was selected only once across the surveys would skew the sample. Households that were in both the EBSS AF and AFP AF samples were therefore assigned to one or the other, on an even distribution basis (so 50% assigned to EBSS AF and 50% to AFP AF).

Respondents contacted for the qualitative research were removed from the samples for each survey to avoid overburdening respondents. DESNZ did not want to survey care homes for ethical reasons and this group was also removed from the sample files before the leads were selected.

Sampling for EBSS AF survey

DESNZ provided a sample file of 125,322 successful applicants to the EBSS AF scheme, including named individuals at specific addresses. A total of 12,416 leads were removed following confirmation from DESNZ that care homes should be excluded, leaving a sample size of 112,906. All remaining cases in the sample file were in-scope of the survey. The sample specified the ' recipient user group' and it was important for the evaluation to analyse data by these sub-groups. Within a sample of 4,000, some of these groups would have low numbers of completes if they were not oversampled, as they represented less than 1% of the sample. A boost was therefore applied which aimed to achieve a minimum of 200 completed surveys with farmers, residents of houseboats and those in temporary accommodation. To account for oversampling of these groups, applicants in park homes were under sampled, as these represented 33% of the total sample. The impact on the effective sample size from applying these boosts was calculated as 95% of the interviewed sample, which was within acceptable bounds, and gave scope to apply other demographic weighting at the analysis stage if needed.[19] The sample was stratified by the distribution of recipients at the Local Authority level according to the geographical distribution in the original sample file prior to selecting c. 22,000 leads.

Sampling for AFP AF survey

DESNZ provided a sample file of 74,549 successful applicants to the AFP AF scheme, including named individuals at specific addresses. As care homes were not indicated in the sample files, a keyword search was applied to identify and remove addresses likely to be care homes e.g. with “care home”, “residential” or “nursing” in the address. All remaining cases in the sample file were considered in-scope of the survey. As with the EBSS AF sample, boosts were applied to achieve larger samples with the following groups: people living in houseboats, tenants (council association), those served by heat networks, and travellers. To account for oversampling of these groups, 'home-owners' were under-sampled as these represented 60% of the total sample. The impact on the effective sample size from applying these boosts was calculated to be 93% of the interviewed sample, which was within acceptable bounds, and gave scope to apply other demographic weighting at the analysis stage. As for EBSS AF recipients, the sample was stratified by the distribution of recipients at the Local Authority level according to the geographical distribution in the original sample file prior to selecting c. 22,000 leads.

[19] Details on the final effective sample size of each sample are provided in section 2.4.

Sampling for AFP survey

No household-level sample file was available for the AFP sample. Instead DESNZ provided a list of all postcodes considered to be eligible for the AFP scheme. There were 2,060,563 addresses within these postcodes, all of which were considered in-scope for the survey. The Ipsos sampling team removed any terminated postcodes, and then created an address-level sample file using the PAF, which was used to select the sample.

Within the postcode file, DESNZ provided a count of Meter Point Administration Numbers (MPANs) within each postcode, each of which represented a property eligible for AFP. This was compared with the number of addresses in the postcode according to the PAF. This process identified a high proportion of mismatches between the MPANs in the postcode and number of residential properties in the postcode, indicating that there may be households ineligible for AFP within the postcode (on the basis that there are more properties than qualifying MPANs, according to DESNZ database). Including a high number of ineligible households would have meant that the response rate was lower than anticipated and ineligible households would potentially receive a letter that may be confusing or complete the survey despite them not being eligible. It was therefore agreed that all postcodes would be excluded from the sample selection where the mismatch was more than three addresses (on the basis that this would be close enough to the number of 'eligible MPANs' provided by DESNZ to minimise the number of ineligible households in the sample). This retained 1,738,516 addresses in the sample (84%). The sample was stratified by Local Authority according to the geographical distribution in the original sample file prior to selecting 22,000 leads.

Sample selection for the wave 2 surveys

All respondents who completed wave 1 and consented to be re-contacted were invited to participate in the wave 2 survey. The following volumes of recontact sample were available for wave 2: 2,294 eligible for EBSS AF survey; 3,377 eligible for AFP AF survey; and 2,691 eligible for AFP survey.

2.4 Data Collection

2.4.1 Data collection for nationally representative survey of GB households (covering primarily EBSS and EPG populations)

The EBSS and EPG schemes were applicable to the majority of households in Great Britain. Therefore, a nationally representative survey design was used to evaluate these schemes, using Ipsos' random probability online panel, UK KnowledgePanel. The fieldwork was conducted in two waves: Wave 1 took place between 28th July and 16th August 2023, and Wave 2 took place between 14th March and 20th March 2024. During each wave, two email reminders were sent to panellists who had not yet started or completed their survey. Following KnowledgePanel's standard reminder process the first reminder was sent on the Friday (the day after survey launch), while the second reminder was sent on the day before fieldwork was

scheduled to close (Tuesday). SMS reminders were sent out on the Monday to younger panellists aged 16-34 who had not yet completed the survey to boost engagement of this group, who typically have lower participation and response rates but are receptive to SMS prompts.

Table 9 KnowledgePanel survey participation response rates

Wave	Number of survey invitations	Number of completes	Response rate
1	16,131	7,850	49%
2	7,825	6,874	88%

Table 10, below, shows the profile, in terms of key characteristics, of those who completed the EBSS and EPG survey. The profile data is presented before weighting adjustments are applied. To optimise survey length and allow more space for core survey questions, some demographic data for respondents in the KnowledgePanel sample was obtained from existing panellist profile information (such as region, gender and household income). KnowledgePanel maintains up-to-date demographic data on its panellists, which is collected at regular intervals. Not all panellists provide this information. In these cases, the demographic data in the table below may have a smaller base size compared to the overall sample due to non-response.

Table 10 Knowledge Panel profile of achieved sample

QS1. Are you responsible or jointly responsible for the gas and/or electricity bills in your household?				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,874	
Yes, me alone	45%	34%	45%	34%
Yes, me and someone else (e.g. partner, housemate) jointly	49%	53%	50%	54%
No	6%	12%	5%	11%

QS2. Do you have mains gas and/or mains electricity in your household?				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,874	
Both mains gas and mains electricity	82%	81%	83%	82%
Mains electricity only	16%	15%	16%	15%
Mains gas only	*%	*%	*%	1%
Neither mains gas nor mains electricity	*%	1%	*%	1%

QS3. How does your household pay for your electricity?				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All respondents with mains electricity	7,713		6,770	
Monthly/quarterly direct debit	84%	81%	84%	82%
Pay by cheque, cash or card on receipt of a bill	6%	6%	6%	6%
Prepayment meter (credit on key or card)	3%	3%	2%	3%
Prepayment meter (top up online/ mobile app)	4%	4%	4%	4%
Intermediary	1%	1%	1%	2%

QS4. What is the main way you heat your home?				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,874	
Gas (central heating)	71%	71%	74%	74%
Alternative Fuels	11%	10%	10%	9%
Communal or district heating (heat networks)	1%	1%	1%	1%
Heat pump	1%	1%	1%	1%
Other	14%	1%	12%	1%

QS7. What type of property do you live in?				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,819	
House	82%	82%	83%	82%
Flat or Maisonette	17%	16%	16%	16%
Houseboat	*%	*%	*%	*%
Alternative/Mobile Housing	*%	*%	*%	*%
Care, nursing or retirement home	*%	*%	*%	*%
Farmhouse	*%	*%	*%	*%

Nation (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,874	
England	85%	86%	85%	85%
Scotland	10%	9%	10%	10%
Wales	5%	5%	5%	5%

Region (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All households in England	6,708		5,872	
North East	5%	4%	5%	4%
North West	13%	11%	13%	11%
Yorkshire and The Humber	10%	8%	10%	8%
East Midlands	9%	7%	9%	7%
West Midlands	10%	9%	9%	9%
East of England	11%	10%	12%	9%
South East	17%	14%	17%	14%
South West	11%	9%	11%	9%
London	15%	13%	15%	13%

Annual household income (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All*	6,370		5,759	
Up to £25,999	34%	22%	31%	21%
£26,000 up to £51,999	37%	29%	38%	29%
£52,000 up to £99,999	20%	19%	22%	21%
£100,000 and above	9%	9%	9%	10%

Gender of respondent (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,779		6,813	
Male	48%	47%	48%	47%
Female	52%	52%	52%	52%

Age of respondent (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base: All	7,850		6,874	
16-24	4%	11%	3%	10%
25-34	9%	17%	7%	17%
35-44	12%	16%	11%	16%

45-54	17%	17%	16%	17%
55-64	24%	16%	25%	16%
65-74	23%	13%	25%	13%
75+	12%	11%	13%	12%

Ethnicity of respondent (KnowledgePanel Panellist Data)				
	Wave 1 UNWTD	Wave 1 WTD	Wave 2 UNWTD	Wave 2 WTD
Base	7,742		6,781	
White (including White minorities)	92%	87%	92%	87%
Ethnic minorities (excluding White minorities)	8%	12%	8%	11%

Note: Percentages may not sum to 100% due to rounding or the omission of 'don't know' and 'prefer not to say' responses. The symbol '*%' denotes values greater than zero but less than 0.5%

2.4.2 Data Collection for EBSS AF, AFP AF and AFP populations

The EBSS AF, AFP AF, and AFP schemes were applicable to specific subsets of the population. Therefore, a targeted push-to-web survey was applied, using samples of EBSS AF and AFP AF recipients and households in eligible postcodes for AFP provided by DESNZ.

Table 11 Alternative scheme survey participation response rates

	Wave 1			Wave 2		
Scheme	Number of survey invitations	Number of completes	Response rate	Number of survey invitations	Number of completes	Response rate
EBSS AF	22,000	3,142	14%	2,294	946	41%
AFP AF	20,000[20]	4,201	21%	3,377	1,838	54%

[20] For EBSS AF and AFP it was necessary to send invitations out to a reserve sample of 2,000 households. This was not necessary for AFP AF due to higher response rates, so invitations were only sent to the main sample of 20,000 households.

AFP	22,000	3,576	16%	2,691	1,192	44%
Total	64,000	10,919	17%	8,362	3,976	48%

The wave 1 survey invited households to provide feedback on at least one energy support scheme. Some households may have been eligible for more than one scheme and were asked questions on additional schemes where applicable. Accounting for this overlap, the number of households surveyed for each scheme is provided in the table below.

Table 12 Number of alternative scheme households surveyed

Scheme	Wave 1	Wave 2
EBSS AF	4,056	1,310
AFP AF	5,099	2,123
AFP	3,803	1,274

The tables below shows the profile of those who completed EBSS AF, AFP, and AFP AF survey. The profile data presented is unweighted to reflect the characteristics of the respondents as collected, before weighting adjustments are applied (see Section 2.5 for weighting).

Table 13 Profile of EBSS AF, AFP AF and AFP populations

QS1. Are you responsible or jointly responsible for the gas and/or electricity bills in your												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All	4,056		1,310		5,099		2,123		3,803		1,274	
Yes, me alone	56%	56%	59%	58%	43%	43%	45%	46%	42%	42%	42%	42%
Yes, me and someone else jointly	39%	39%	38%	38%	56%	56%	54%	54%	57%	57%	58%	57%
No	3%	3%	3%	3%	*%	*%	*%	*%	1%	1%	*%	1%

QS2. Do you have mains gas and/or mains electricity in your household?												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All	4,056		1,310		5,099		2,123		3,803		1,274	
Both mains gas and mains electricity	27%	27%	27%	28%	4%	4%	5%	5%	1%	1%	1%	1%
Mains electricity only	60%	60%	64%	62%	90%	90%	91%	91%	98%	98%	98%	97%
Mains gas only	1%	1%	1%	1%	*%	*%	*%	*%	*%	*%		
Neither mains gas nor mains electricity	8%	8%	7%	8%	4%	4%	3%	4%	1%	1%	1%	1%

QS3. How does your household pay for your electricity?												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All respondents with mains electricity	3,530		1,183		4,838		2,042		3,768		1,259	
Monthly/quarterly direct debit	15%	15%	13%	15%	66%	66%	69%	66%	86%	86%	89%	88%
Pay by cheque, cash or card on receipt of a bill	5%	5%	6%	7%	5%	5%	5%	6%	7%	7%	5%	5%
Prepayment meter (credit on key or card)	4%	4%	4%	4%	2%	2%	2%	2%	2%	2%	1%	2%
Prepayment meter (top up online/ mobile app)	5%	5%	4%	5%	2%	2%	1%	1%	2%	2%	1%	1%
Intermediary	61%	62%	64%	61%	22%	22%	19%	21%	1%	1%	1%	1%
Pay in another way	8%	8%	7%	8%	3%	3%	3%	3%	2%	2%	2%	3%

QS4. What is the main way you heat your home?												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All	4,056		1,310		5,099		2,123		3,803		1,274	
Central heating	45%	45%	45%	46%	70%	70%	72%	71%	65%	65%	64%	63%
Fixed room heaters, fires and stoves	35%	35%	36%	35%	25%	25%	22%	23%	21%	21%	21%	21%
Portable heaters	7%	7%	7%	7%	2%	2%	3%	3%	4%	4%	3%	3%
Other	10%	10%	9%	10%	3%	3%	3%	3%	10%	10%	12%	12%

Nation												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All	4,056		1,310		5,099		2,123		3,803		1,274	
England	89%	89%	88%	89%	82%	81%	82%	81%	81%	78%	82%	78%
Scotland	5%	6%	5%	6%	8%	11%	8%	11%	9%	11%	8%	11%
Wales	6%	5%	7%	5%	10%	8%	10%	8%	10%	11%	10%	11%

Region												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All households in England	3,608		1,150		4,189		1,736		3,087		1,046	
North East	2%	2%	2%	2%	3%	2%	3%	2%	3%	2%	4%	2%
North West	11%	10%	11%	10%	8%	7%	8%	7%	6%	5%	5%	5%
Yorkshire and The Humber	8%	7%	9%	7%	7%	7%	7%	7%	7%	5%	7%	5%
East Midlands	12%	8%	12%	8%	15%	11%	15%	11%	11%	7%	12%	7%
West Midlands	11%	10%	11%	10%	11%	8%	11%	8%	10%	8%	10%	8%
East of England	12%	11%	12%	11%	18%	16%	18%	16%	21%	17%	21%	17%
South East	20%	20%	19%	20%	17%	14%	17%	14%	15%	12%	14%	12%
South West	16%	13%	17%	13%	20%	16%	20%	16%	26%	21%	27%	21%
London	9%	8%	7%	8%	1%	*%	1%	*%	0%	*%	-	-

Household Size												
	EBSS AF				AFP AF				AFP			
	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD	W1 UNWTD	W1 WTD	W2 UNWTD	W2 WTD
Base: All	4,056		1,310		5,099		2,123		3,803		1,274	
One person	45%	45%	48%	46%	22%	22%	22%	23%	19%	19%	20%	20%
Two people	42%	42%	43%	42%	54%	54%	56%	55%	52%	51%	53%	51%
Three people	5%	5%	4%	4%	10%	10%	10%	10%	13%	13%	13%	14%
Four people	3%	3%	2%	3%	9%	9%	9%	9%	10%	10%	9%	10%
Five or more people	2%	1%	2%	1%	4%	5%	3%	3%	5%	5%	3%	4%

2.4.3 Letters and reminders

The recruitment approach for push-to-web involves inviting participants to take part in an online survey via a letter to their home (or via email which was used in wave 2, detailed further below). The invitation directed households to a survey website landing page (https://ipsos.uk/energysupportsurvey) where they could enter the unique access code provided in the letter. This prevented duplicate responses across households. As all routing is managed by the script this method also minimises participant error in survey completion. To capture the views of the digitally excluded participants also had the option to complete the survey by telephone.

Letter design

The principles for designing the invitation and reminder letters emerged from best practice developed in previous studies (such as the Green Homes Grant Vouchers Evaluation conducted for DESNZ). The letters were designed to provide all information required by the respondent to complete the survey and to answer common queries. The guiding principles for designing the letters were to use simple and easy to understand language and to cover key messages, including:

a) The survey's importance

b) Motivators for taking part

c) Reasons for being invited to participate in the survey (random selection from a list of successful applicants to the EBSS AF, AFP AF or AFP schemes)

d) How to take part

e) Incentive for taking part (a £10 voucher)

f) Information about keeping personal data safe

g) A telephone number for people to call if they preferred to complete the survey via telephone and for survey related queries

The survey's importance was conveyed in the invitation letters in the following ways:

- The DESNZ and Ipsos logos were placed prominently on the letter and envelope
- Visual clutter was avoided
- A professional letter format with address of recipient and full date was included
- The letter was signed by someone with authority at both Ipsos and DESNZ (signified by their job title)
- Key messages in the text were highlighted

The main motivational statements varied across the initial invitation and reminder letters, with the aim of increasing the likelihood of converting non-respondents:

- 1st letter: It's easy to take part and here are the reasons for doing so
- 2nd letter / reminder: You'll be helping to influence government policies. It's easy to take part and you will receive a £10 voucher

While all letters placed a degree of emphasis on the financial motivator for taking part (receiving a £10 gift voucher), the reminder letter emphasised this incentive by mentioning it for a second time in the prominent "reasons for taking part" section.

Letters and reminder strategy

The mailing approach followed Ipsos's standard push-to-web methodology:

- An initial invitation letter was issued to all sampled addresses inviting households to go online and complete the survey. For the EBSS AF and AFP AF schemes, the letter was addressed to the named recipient. For the AFP scheme, where a named eligible household was not available, the letter was addressed to "The Householder". In all cases, the letter included a unique access code and invited the recipient to complete the online questionnaire.
- Up to three reminder letters were sent to non-responding addresses. The scheduling of the reminder letters was informed by the response rates observed across the three samples.

In wave 1, 64,000 households were invited to take part by letter from early November. Initially, a pilot launch of 400 invitations was sent to each sample group (EBSS AF, AFP AF, AFP). Up to three reminder letters were sent to non-responding addresses to help maximise the response rate. Due to lower response rates, invitations were sent to an additional 2,000 reserve sample addresses for EBSS AF and AFP. Data collection for wave 1 started on 30th October and concluded on 21st December 2023.

In wave 2, invitations were sent to all households who completed the wave 1 survey and agreed to be re-contacted (8,362 households). In response to the announcement of the general election and resulting pre-election period restrictions on communication activity, email invitations were used for households who had provided a contact email address (97% of the wave 2 sample) to avoid delaying the launch of fieldwork and ensure timely delivery before the pre-election period. A small proportion (250) of email invitations were piloted on the 5th of April 2024, followed by the full email sample on the 9th of April 2024. In total, 247 households who did not provide email addresses received a letter invitation (mailed on the 5th of April 2024). After the pre-election period, letter reminders were sent to all non-responding addresses on the 7th of May 2024. Data collection for wave 2 concluded on the 21st of May 2024

Online questionnaire accessibility

The online questionnaire was designed to be as accessible as possible to respondents. The survey was designed to be accessed using a range of devices, including desktop computers, laptops, smartphones, tablets and other small screen devices. This ensured that respondents could participate using their preferred device without any issues. Additionally, the online questionnaire was designed in a way that made it easy for people to adjust colour contrasts and increase font size.

For respondents without online access or who preferred not to complete the survey online, a telephone number was provided to schedule an interview with a telephone interviewer at Ipsos. Telephone interviews were conducted with 145 respondents in wave 1 and 44 respondents in wave 2.

Incentives

Incentives were used to encourage participation in the survey and boost response rates. A £10 incentive was offered upon completion of the survey in wave 1 and 2. At the end of the survey, respondents could choose to receive a Love2shop voucher. Those who provided their email address received an e-voucher, while those who did not have an email address, or preferred not to provide an email address, received a paper postal voucher redeemable online at the Love2Shop website.

Handling queries

The survey website provided information about the survey and included a list of FAQs which had been developed based on similar studies. A dedicated telephone helpline and email address (UK-PA-DEAS-survey@ipsos.com) were also set up allowing participants to contact Ipsos regarding any queries about the survey. Telephone queries were recorded through an answer machine monitored by the research team, a member of which would return the call on identifying an appropriate solution. Emails received were first answered with an automatic response setting out that an individualised response from the team would be provided and setting out answers to frequently asked questions. Each query was then followed up individually. Common queries included: requests for assistance accessing the online survey; requests to take part via telephone; queries regarding the voucher' and requests to opt out of the survey. In addition to the Ipsos contact details, a DESNZ email address was provided in the survey invitation for participants who wished to contact DESNZ about the evaluation of the scheme.

2.4.4 Data management and coding

Questionnaire versions

Data were collected from an online questionnaire (with an option for respondents to complete the online survey via telephone interview, which a small number of participants opted for). The

survey questionnaire was designed to include built-in routing and checks within the online platform.

Coding

Coding was carried out on 3 open-ended questions in wave 1 and a number of questions which included 'other specify' options in both wave 1 and wave 2, where a list of answer options at a survey question also included an option allowing participants to write in their own answer if appropriate. Coding was undertaken by Ipsos's dedicated coding team. They built a code frame drawing on the key themes identified in the responses and updated it throughout the analysis to ensure that any emerging themes were captured. If a sufficient number of respondents mentioned a specific theme that was not captured in the pre-existing answer options, a new code was assigned to represent that theme. After the code frame was developed, it was reviewed and edited by Ipsos's core research team before being included in the datasets.

Checks on data tables and SPSS

Ipsos checked the data tables against the table specification, ensuring all questions were included, that down-breaks included all categories from the question, that base sizes were correct (e.g. for filtered questions), base text is right, cross-breaks add up and are using the right categories, nets have summed the correct codes, and that summary and recoded tables are included. Weighting of the tables was also checked by applying the correct weight on the SPSS file then running descriptives and cross-break tabulations to check that this matches up with the values on the tables.

Checks on respondent eligibility

In order to ensure that all relevant scheme recipients (or eligible households in the case of AFP) were in each data set (EBSS, EBSS AF, AFP AF and AFP) additional check questions were used to verify household eligibility for the correct scheme/s by cross-referencing responses with specific criteria such as property type or presence of mains gas, rather than relying solely on respondents' perceptions or self-reported eligibility. This reduced the risk of confusion between different support schemes and ensured that all relevant participants were appropriately categorised under each scheme based on their responses, even if they were not part of the original sample files for that particular scheme.

- For EBSS AF, question QC1a was used to identify additional respondents. This question asked respondents from the AFP or AFP AF sample files if anyone else in their household, or a nominated trusted individual applied for the EBSS AF for their household. Respondents who selected the option indicating they had applied were added to the EBSS AF data set, resulting in 90 additional respondents from other samples being included in the final data.
- For AFP AF and AFP, question QC9 was used to identify additional respondents. This question provided context about the AFP scheme. Those who selected options

indicating they had applied for the payment and either received it or did not receive it were added to the AFP AF data, resulting in 393 additional respondents from other samples being included. Those who selected the option indicating they received the payment automatically without applying were added to the AFP data tables, resulting in 227 additional respondents being included in the AFP data. The "Energy Support Scheme (Sample Group)" crossbreak was updated to reflect these additional respondents in their respective scheme categories.

2.5 Weighting

2.5.1 Wave 1 nationally representative survey of GB households (covering primarily EBSS and EPG)

Weighting is required to reduce the bias in survey estimates and weights are produced to make the weighted achieved sample match the population as closely as possible. For the wave 1 survey of the general population (who would predominantly have received EBSS and EPG), to ensure the survey results are representative of the target population, the data were weighted to the population profile of GB households. As one person per household was allowed to complete this survey a selection weight corrected for varying household sizes and unequal probabilities of selection of household members. Calibration weights were applied using the latest population statistics relevant to the surveyed population to correct for imbalances in the achieved sample. England and Wales were weighted together, while a separate weight was created for Scotland.

The calibration weights were applied in two stages:

- The first set of variables were an interlocked variable of gender by age, and region using ONS 2019 mid-year population estimates as the weighting targets.
- The second set were weights for the education, ethnicity, index of multiple deprivation (quintiles), and number of adults in the household using ONS 2019 mid-year population estimates and the ONS Annual Population Survey as the weighting targets.

Table 14 Weighting profile targets for England and Wales

Age & Gender				
	Male	Female	In another way	PNTS
16-24	6.7%	6.3%	0.19%	0.04%
25-35	8.3%	8.2%	0.17%	0.04%
35-44	7.7%	7.8%	0.04%	0.06%

45-54	8.2%	8.4%	0.01%	0.04%
55-64	7.3%	7.5%	0.04%	0.14%
65-74	5.9%	6.4%	0.04%	0.04%
75+	4.5%	6.0%		0.04%

Region	
North East	4.6%
North West	12.4%
Yorkshire and The Humber	9.3%
East Midlands	8.2%
West Midlands	9.9%
East of England	10.5%
London	14.8%
South East	15.4%
South West	9.6%
Wales	5.4%
IMD Quintiles	
1	20.0%
2	20.0%
3	20.0%
4	20.0%
5	20.0%

Education	
Degree level or above	29.9%
Below degree level	68.7%
Prefer not to say/Not stated	1.5%

Ethnicity	
White	85.4%
Non-White	12.9%
Don’t know/Prefer not to say	1.6%

Number of adults in the households	
One adult	18.2%
Two or more adults	81.8%

Table 15 Weighting profile targets for Scotland

Age & Gender				
	Male	Female	In another way	PNTS
16-24	14.59%	14.47%	0.17%	0.00%
25-35	7.22%	7.51%	0.08%	0.00%
35-44	8.09%	8.63%	0.00%	0.17%
45-54	8.09%	8.63%	0.00%	0.00%
55-64	7.84%	8.34%	0.00%	0.00%
65-74	6.07%	6.61%	0.00%	0.00%
75+	4.22%	5.99%	0.00%	0.00%

Region	
Eastern	38.9%
Highlands and Islands	9.0%
North Eastern	8.9%
South Western	43.2%

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

Education	
Degree level or above	27.7%
Below degree level	71.0%
Prefer not to say/Not stated	1.4%

Ethnicity	
White	94.5%
Non-White	4.7%
Don’t know/Prefer not to say	0.8%

Number of adults in the households	
One adult	21.7%
Two or more adults	78.3%

2.5.2 Wave 1 push-to-web surveys of EBSS AF, AFP AF and AFP

As there was considered to be no reliable demographic profiles of EBSS AF and AFP AF recipients and households eligible for AFP, and the only information available in the sample files provided by DESNZ was the postcode of recipients' households, the only weighting applied was a regional weight, matched to the regional distribution of recipients in the sample files. The regional weighting for each sample is provided below.

Table 16 EBSS AF Sample

Region	EBSS AF full sample counts	Weighting applied to data
East Midlands	9,757	7.79%
East of England	13,900	11.09%
London	9,583	7.65%
North East	2,944	2.35%
North West	12,735	10.16%
Scotland	7,722	6.16%
South East	25,334	20.22%
South West	16,246	12.96%
Wales	5,795	4.62%
West Midlands	12,232	9.76%
Yorkshire and The Humber	9,074	7.24%
Grand Total	125,322	100%

Table 17 AFP AF Sample

Region	AFP AF full sample counts	Weighting applied to data
East Midlands	8,393	11.26%
East of England	11,611	15.57%
London	184	0.25%
North East	1,817	2.44%
North West	5,060	6.79%
Scotland	8,004	10.74%
South East	10,444	14.01%
South West	11,599	15.56%
Wales	6,194	8.31%
West Midlands	6,303	8.45%
Yorkshire and The Humber	4,940	6.63%
Grand Total	74,549	100%

Table 18 AFP Sample

Region / nation	AFP full sample counts	Weighting applied to data
East Midlands	128,453	7.39%
East of England	303,832	17.48%
London	1,907	0.11%
North East	40,473	2.33%
North West	80,155	4.61%
Scotland	189,547	10.90%

South East	215,048	12.37%
South West	358,793	20.64%
Wales	189,287	10.89%
West Midlands	137,307	7.90%
Yorkshire and The Humber	93,714	5.39%
Grand Total	1,738,516	100%

2.5.3 Wave 2 surveys

Due to the longitudinal nature of the wave 2 data, which includes only those participants who completed the wave 1 surveys, a longitudinal weight was applied for both the KnowledgePanel survey of GB households (primarily covering EBSS and EPG households) and the push-to-web surveys of EBSS AF, AFP AF and AFP households. This accounted for potential bias introduced from attrition (respondents in wave 1 not taking part in wave 2) and to ensure the wave 2 data accurately reflects the composition of the wave 1 sample.

The wave 2 longitudinal weights for each dataset were calculated as follows:

1. A stepwise logistic model predicting response versus non-response to identify characteristics significantly associated with differential patterns of non-response.
2. The distribution of the non-response weight from the model was checked and trimmed to mitigate the potential for extreme weights.
3. The trimmed non-response weight from the model was multiplied by the wave 1 weight to obtain the combined weight.
4. The combined weight was calibrated to the population distributions of the calibration variables.

Model details and weighting adjustments for data collection for nationally representative survey of GB households

The following variables from the GB KnowledgePanel survey were used in the stepwise logistic regression model: Age, work status, highest education qualification, housing tenure, annual household income, region, urban/rural classification, and Index of Multiple Deprivation (IMD). This enabled us to identify characteristics associated with differential patterns of non-response. The final model, used to calculate the non-response weights, included the following variables: Age, annual household income, eligibility for Energy Support Scheme, property type, region and whether a household member has a disability.

These non-response weights were trimmed at the 1st percentile and above the 99th percentile to reduce the range of the weights and hence improve the efficiency. This involved setting the

extreme values to the corresponding values at the 1st and 99th percentiles. These non-response weights were then combined with the final wave 1 weights, and these were adjusted to the same population totals as were used for wave 1 using calibration weighting.

Table 19 Demographic Profile by Age and Gender

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales Male - 16-24	6.7%	1.0%	3.9%	4.1%
England & Wales Male - 25-34	8.3%	2.8%	8.2%	7.9%
England & Wales Male - 35-44	7.7%	5.1%	8.2%	7.9%
England & Wales Male - 45-54	8.2%	7.5%	8.5%	8.5%
England & Wales Male - 55-64	7.3%	12.1%	7.7%	7.6%
England & Wales Male - 65-74	5.9%	12.4%	6.2%	6.1%
England & Wales Male - 75+	4.5%	6.7%	4.7%	4.7%
England & Wales Female - 16-24	6.3%	2.1%	6.5%	6.5%
England & Wales Female - 25-34	8.2%	4.7%	8.2%	8.5%
England & Wales Female - 35-44	7.8%	6.4%	7.9%	8.1%
England & Wales Female - 45-54	8.4%	9.3%	8.7%	8.7%
England & Wales Female - 55-64	7.5%	12.5%	7.7%	7.8%
England & Wales Female - 65-74	6.4%	11.9%	6.5%	6.6%
England & Wales Female - 75+	6.0%	4.6%	6.2%	6.2%

Prefer Not to Say/Not stated	0.9%	0.9%	0.9%	0.9%
England & Wales Total	100.0%	100.0%	100.0%	100.0%
Scotland Male - 16-34	14.6%	4.2%	14.5%	14.4%
1 Scotland Male - 35-44	7.2%	3.0%	6.7%	7.2%
1 Scotland Male - 45-54	8.1%	6.2%	7.9%	8.1%
1 Scotland Male - 55-64	7.8%	13.4%	8.1%	7.9%
Scotland Male - 65-74	6.1%	16.7%	6.2%	6.1%
2 Scotland Male - 75+	4.2%	8.5%	4.7%	4.2%
2 Scotland Female - 16-34	14.5%	5.0%	13.8%	14.5%
2 Scotland Female - 35-44	7.5%	5.9%	7.3%	7.5%
2 Scotland Female - 45-54	8.6%	7.6%	8.8%	8.6%
2 Scotland Female - 55-64	8.3%	13.2%	8.9%	8.3%
2 Scotland Female - 65-74	6.6%	10.8%	6.6%	6.6%
2 Scotland Female - 75+	6.0%	5.0%	5.9%	6.0%
Prefer Not to Say/Not stated	0.4%	0.5%	0.5%	0.4%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Table 20 Regional Distribution (England & Wales and Scotland)

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales - North East	4.6%	4.4%	4.5%	4.5%
England & Wales - North West	12.4%	12.1%	12.4%	12.4%
England & Wales - Yorkshire and The Humber	9.3%	9.2%	9.1%	9.2%
England & Wales - East Midlands	8.2%	8.2%	8.1%	8.1%
England & Wales - West Midlands	9.9%	9.0%	9.9%	9.9%
England & Wales - East of England	10.5%	10.9%	10.5%	10.4%
England & Wales - South East	15.4%	16.1%	15.7%	15.7%
England & Wales - South West	9.6%	10.4%	9.7%	9.7%
England & Wales - London	14.8%	14.3%	14.6%	14.6%
England & Wales - Wales	5.4%	5.4%	5.5%	5.5%
England & Wales Total	100.0%	100.0%	100.0%	100.0%
Scotland - Eastern	38.9%	44.5%	38.7%	38.9%
Scotland - Highlands and Islands	9.0%	10.8%	10.1%	9.0%
Scotland - North Eastern	8.9%	9.1%	8.6%	8.9%
Scotland - South Western	43.2%	35.7%	42.6%	43.2%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Table 21 Socioeconomic Profile (Deprivation Index)

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales- 1 - Most deprived	20.0%	18.5%	20.3%	20.0%
England & Wales- 2	20.0%	19.5%	19.8%	20.1%
England & Wales- 3	20.0%	21.6%	20.4%	20.2%
England & Wales- 4	20.0%	20.5%	19.9%	19.9%
England & Wales- 5 - Least deprived	20.0%	19.9%	19.6%	19.8%
England & Wales	100.0%	100.0%	100.0%	100.0%
Scotland- 1 - Most deprived	20.0%	17.8%	19.6%	20.1%
Scotland- 2	20.0%	20.8%	21.2%	20.1%
Scotland- 3	20.0%	20.2%	20.1%	19.9%
Scotland- 4	20.0%	19.9%	20.4%	19.9%
Scotland- 5 - Least deprived	20.0%	21.4%	18.7%	20.0%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Table 22 Educational Attainment Profile

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales- Degree level or above	30.0%	33.0%	30.8%	30.8%
England & Wales- Below degree Level	69.0%	66.0%	68.1%	68.1%
England & Wales- Prefer not to say/NS	1.1%	1.1%	1.1%	1.1%
England & Wales Total	100.0%	100.0%	100.0%	100.0%
Scotland- Degree level or above	27.9%	27.8%	27.8%	28.1%
Scotland- Below degree Level	71.6%	71.6%	71.5%	71.4%
Scotland- Prefer not to say/Not stated	0.5%	0.6%	0.7%	0.6%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Table 23 Ethnic Background Profile

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales White	85.6%	90.2%	85.8%	86.4%
England & Wales BAME	12.9%	8.4%	12.6%	12.2%
England & Wales Prefer not to say/Don't Know /Not Stated	1.4%	1.4%	1.5%	1.4%
England & Wales Total	100.0%	100.0%	100.0%	100.0%
Scotland White	94.2%	97.3%	95.1%	94.3%
Scotland BAME	4.7%	2.1%	3.7%	4.6%
Scotland Prefer not to say/Don't Know/Not stated	1.1%	0.6%	1.2%	1.1%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Table 24 Household Composition Profile

	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
England & Wales- 0 or 1 adult	18.2%	31.0%	18.1%	18.2%
England & Wales- 2 or more adults	81.8%	69.0%	81.9%	81.8%
Total	100.0%	100.0%	100.0%	100.0%

Scotland- 0 or 1 adult	21.7%	33.1%	22.8%	21.5%
Scotland- 2 or more adults	78.3%	66.9%	77.2%	78.5%
Scotland Total	100.0%	100.0%	100.0%	100.0%

Model details and weighting adjustments for data collection for EBSS AF, AFP AF and AFP surveys

Participation in the second wave of the surveys was modelled using stepwise logistic regression. A separate model was produced for each of the EBSS AF, AFP AF, and AFP schemes, with the outcome measure being whether the customer participated in wave 2 or not for all wave 1 participants. A range of possible measures were considered for the model, with stepwise regression selecting the key ones within which there was statistically significant variation in the rates of non-response by category to be included: region, age, work status, highest education qualification, housing tenure (owned, rented, etc.), property type, annual household income, gender, household size, property type, whether a household member has a disability, energy bill payment type, energy tariff and main energy source. The models were used to generate the estimated propensity of participation in wave 2, and from these the non-response weights were calculated. The following variables were included in the final model for each scheme.

Table 25 Statistically significant predictors of non-response in the final Non-Response Weighting Model

EBSS AF	AFP AF	AFP
Age	Age	Age
Highest education qualification	Work status	Work status
Housing tenure	Highest education	Highest education
Annual household income	Annual household income	Annual household income
Energy bill payment type	Fixed tariff or not	Fixed tariff or not
Household size (16+)		

The non-response weights were trimmed at the 1st and 97.5th percentiles to reduce the range of the weights and hence improve the efficiency. This involved setting the extreme values to

the corresponding values at these percentiles. These non-response weights were then combined with the final wave 1 weights and these were adjusted to the same population totals as were used for wave 1 using calibration weighting.

Table 26 Region Profile for EBSS AF

Region	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
East Midlands	7.8%	10.8%	7.7%	7.8%
East of England	11.1%	10.8%	11.8%	11.1%
North East	2.3%	1.7%	2.3%	2.3%
North West	10.2%	9.2%	9.7%	10.2%
South East & London	27.9%	23.1%	25.6%	27.9%
South West	13.0%	14.7%	13.4%	13.0%
West Midlands	9.8%	9.8%	9.8%	9.8%
Yorkshire and The Humber	7.2%	7.7%	8.1%	7.2%
Wales	4.6%	5.0%	5.0%	4.6%
Scotland	6.2%	7.2%	6.6%	6.2%
Grand Total	100%	100.0%	100.0%	100.0%

Table 27 Region Profile for AFP AF

Region	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
East Midlands	11.3%	11.9%	11.0%	11.3%
East of England	15.6%	14.6%	16.0%	15.6%
North East	2.4%	2.5%	2.6%	2.4%
North West	6.8%	6.9%	6.7%	6.8%
South East & London	14.3%	14.3%	13.8%	14.3%
South West	15.6%	16.4%	15.6%	15.6%
West Midlands	8.5%	9.1%	8.4%	8.5%
Yorkshire and The Humber	6.6%	6.0%	6.8%	6.6%
Wales	8.3%	8.4%	9.1%	8.3%
Scotland	10.7%	9.8%	10.1%	10.7%
Grand Total	100%	100.0%	100.0%	100.0%

Table 28 Region Profile for AFP

Region	Target Population Profile	Unweighted	Non-Response Adjusted Weight	Final Weighted Sample
East Midlands	7.4%	9.7%	8.0%	7.4%
East of England	17.5%	17.3%	18.1%	17.5%
North East	2.3%	3.1%	3.1%	2.3%
North West	4.6%	4.4%	4.4%	4.6%
South East & London	12.5%	11.6%	11.0%	12.5%
South West	20.6%	22.1%	21.9%	20.6%
West Midlands	7.9%	7.9%	7.7%	7.9%
Yorkshire and The Humber	5.4%	6.0%	5.5%	5.4%
Wales	10.9%	8.2%	10.1%	10.9%
Scotland	10.9%	9.7%	10.2%	10.9%
Grand Total	100%	100.0%	100.0%	100.0%

2.5.4 Confidence Intervals and Margin of Error

As a worked through example, the overall sample for wave 1 of the KnowledgePanel survey has a margin of error range of ±0.8 to ±1.4 percentage points, based on a 95% confidence interval calculation. Meaning, if we were to conduct this survey 100 times (each time with a different nationally representative sample), we would expect the results to be within 0.8 to 1.4 percentage points of the results we achieved here in 95 out of those 100 cases. The range illustrates that survey results closer to 50% tend to have higher margins of error. If 90% of surveyed respondents said they paid they energy bills by direct debit, this result would have a margin of error of ±0.8 percentage points, whereas if only 50% this, the margin of error would be ±1.4 percentage points. The margins of error are calculated using the effective sample sizes (which take into account survey weighting).

Margins of error (MoE) for each sample group for different survey estimates (in percentage points)

Table 29 Wave 1 nationally Representative KnowledgePanel survey of GB Households

Sample group	Sample size	Effective sample size	10% or 90% estimate	30% or 70% estimate	50% estimate
Wave 1	7,850	5,168	±0.8	±1.2	±1.4
Wave 2	6,874	4,216	±0.9	±1.4	±1.5

Table 30 Wave 1 Push-to-web surveys of EBSS AF, AP AF and AFP

Sample group	Sample size	Effective sample size	10% or 90% estimate	30% or 70% estimate	50% estimate
Wave 1 EBSS AF	4,056	3,996	±0.9	±1.4	±1.6
Wave 1 AFP AF	5,099	5,072	±0.8	±1.2	±1.3
Wave 1 AFP	3,803	3,764	±1.0	±1.5	±1.6
Wave 2 EBSS AF	1,310	1,161	±1.7	±2.6	±2.9
Wave 2 AFP AF	2,123	2,009	±1.3	±2.0	±2.2
Wave 2 AFP	1,274	1,151	±1.7	±2.6	±2.9

Annex A3 Qualitative methodology

Qualitative, semi-structured interviews were held with household and relevant stakeholders to provide insights into people's experiences of Government energy support schemes and self-reported impacts of the schemes on aspects such as household finances, energy consumption, health and welfare. The research was conducted in two waves (Wave 1: May – September 2023; Wave 2: April – August 2024) and all interviews lasted between 45 – 60 minutes.

3.1 Recruitment

3.1.1 Wave 1

Wave 1 of this research was conducted shortly after the support schemes were administered, with interviews taking place between June and September 2023. Interviews were recruited via our recruitment partner Criteria Fieldwork using a mix of freefind methods[21], DESNZ sample, desk research and existing contacts. All participants received a thank you payment (either in the form of a BACS transfer or Love2Shop Voucher) of £55. All interviews were conducted online or by telephone and any findings were reported on anonymously – additionally participants received an information sheet and privacy notice, giving an overview of the project, their role and outlining their rights around the data they were sharing in the interviews, which was reiterated at the start of each interview. All interviews audio-recorded and transcribed by the transcription partner VerbitGo.

The table below shows the breakdown of interview groups and their recruitment methods:

Table 31 Breakdown of wave 1 interview audience by sub-group and recruitment method

Audience	Sub group	Recruitment method
Household	Group 1 – EPG & EBSS recipients	Freefind
	Group 2 – EBSS AF recipients	DESNZ sample
	Group 3 – AFP recipients	Freefind – with DESNZ supplied eligible postcodes
	Group 4 – EBSS AF & AFP AF recipients	DESNZ sample

[21] where the recruitment company used predominately regional qualitative datasets, with some telephone cold-calls and on-street recruitment to identify suitable participants.

Stakeholder	Experts specialising in vulnerable populations	Existing contacts (DESNZ and Ipsos) and desk research
	Local Authorities	DESNZ contacts and via Association of Local Energy Officers
	Contact centre	DESNZ contacts

Alongside these interviews, London Economics conducted interviews with energy suppliers, scheme administrators and with Ofgem.

3.1.2 Wave 2

Wave 2 involved follow up interviews with household participants from Wave 1 and some stakeholders who were interviewed in Wave 1 – new stakeholders were interviewed only when the original interviewee had moved roles. This approach allowed for longitudinal insights to be developed – in particular how participants' experiences compared between the winter with higher prices but with the support of the domestic energy affordability schemes (2022/23) and the recent winter with lower prices but without the same level of financial support (2023/24).

Interviews with household participants were recruited through recontact sample, i.e. recontacting participants who had already taken part in the Wave 1 research and had agreed to be contacted again for future research. Interviews with stakeholder participants were similarly recruited through the original contact but progressed through colleagues of the original interviewee where necessary. The table below shows the breakdown of interview groups and their recruitment methods in more detail:

Table 32 Breakdown of wave 2 interview audience by sub-group and recruitment method

Audience	Sub group	Number of interviews	Recruitment method
Household	Group 1 – EPG & EBSS recipients	25	Recontact from wave 1
	Group 2 – EBSS AF & EBRS/EPG recipients	13	Recontact from wave 1
	Group 3 – AFP recipients	10	Recontact from wave 1
	Group 4 – EBSS AF & AFP AF recipients	11	Recontact from wave 1

Stakeholder	Experts specialising in vulnerable populations	7	Recontact from wave 1 & recruiting via colleagues of original interviewee where necessary

Fieldwork in Wave 2 was paused from 23rd May following the announcement of a general election on 4th July 2024. It was agreed that household participation would end and the team's focus would shift to analysis and reporting, while stakeholder interviews continued following the election.

3.2 Focus of interviews

Wave 1 interviews and Wave 2 interviews focused on slightly different areas, with some overlap to draw comparisons across both waves.

3.2.1 Wave 1

These interviews focussed on the following areas:

Table 33 Wave 1 interview theme by stakeholder

Household interviews	Stakeholder interviews
• Awareness and understanding of the schemes • Experience paying energy bills and cases of underconsumption • Views on the schemes' financial support	• Implementation and delivery of the schemes • Support from DESNZ during the schemes • Scheme accessibility, awareness and understanding • Impact of the schemes • Lessons learned

3.2.2 Wave 2

The Stage 2 interviews focused on experiences and perceptions over time and understanding changes over the past year. These interviews focussed on the following areas:

Table 34 Wave 2 interview theme by stakeholder

Household interviews	Stakeholder interviews
• Feelings about energy bills over time	• Perceptions over time • Experiences of consumers over time

• Experience over time • Household behaviours and health over time • Perceptions over time	• Household finances and other support • Overall impact of energy support • Lessons learned

3.3 Data collection

3.3.1 Wave 1

In wave 1 Ipsos conducted a total of 153 household interviews and 48 stakeholder interviews. London Economics conducted 11 interviews with energy suppliers, scheme administrators and Ofgem. The tables below show the breakdown of interviews by number and sub-group.

Table 35 Breakdown of Wave 1 interviews by audience, sub-group and number of interviews

Audience	Sub group	Number of interviews
Household	Group 1 – EPG & EBSS recipients	62
	Group 2 – EBSS AF & EBRS/EPG recipients	38
	Group 3 – AFP recipients	27
	Group 4 – EBSS AF & AFP AF recipients	26
Stakeholder	Experts specialising in vulnerable populations	10
	Local Authorities	36
	Contact centre	2

Table 36 Breakdown of Wave 1 interviews conducted by London Economics

Audience	Number of interviews
Energy suppliers	8
Scheme administrators	2
Ofgem	1

3.3.2 Wave 2

In wave 2 Ipsos conducted a total of 59 household interviews and 7 stakeholder interviews. The table below shows the breakdown of interviews by number and sub-group:

Table 37 Breakdown of Wave 2 interviews by audience, sub-group and number of interviews

Audience	Sub group	Number of interviews
Household	Group 1 – EPG & EBSS recipients	25
	Group 2 – EBSS AF & EBRS/EPG recipients	13
	Group 3 – AFP recipients	10
	Group 4 – EBSS AF & AFP AF recipients	11
Stakeholder	Experts specialising in vulnerable populations	7

3.4 Additional Qualitative Research

Between these waves of qualitative research, Ipsos delivered three additional pieces of qualitative research, intended to understand the experiences of specific groups not represented in the Wave 1 participant pool and requiring a bespoke approach in engagement and interview design. The first of these were 15 interviews with the families of care home residents (January – March 2024), representing different types of care homes and different sources of funding and in locations across Great Britain – this was reported on as part of the second wave of research.

Ipsos also began a parallel piece of research with care home providers, but despite best efforts, including sending out 250 letters to care home site managers in England, Scotland and Wales and exploring multiple different options and costs to recruit care home staff, the decision was taken to halt recruitment. This decision was based on the recruitment costs being too high for the small number of interviews it would result in.

The second additional piece of qualitative research were 20 interviews with continuous cruisers (March – May 2024), representing a variety of time having lived on the water and in locations across Great Britain. The third strand was a set of 5 interviews with continuous cruisers stakeholder organisations (March – May 2024). The second and third strands of this additional research were reported on separately from the main waves of research. More detail on these strands can be found in Annex C

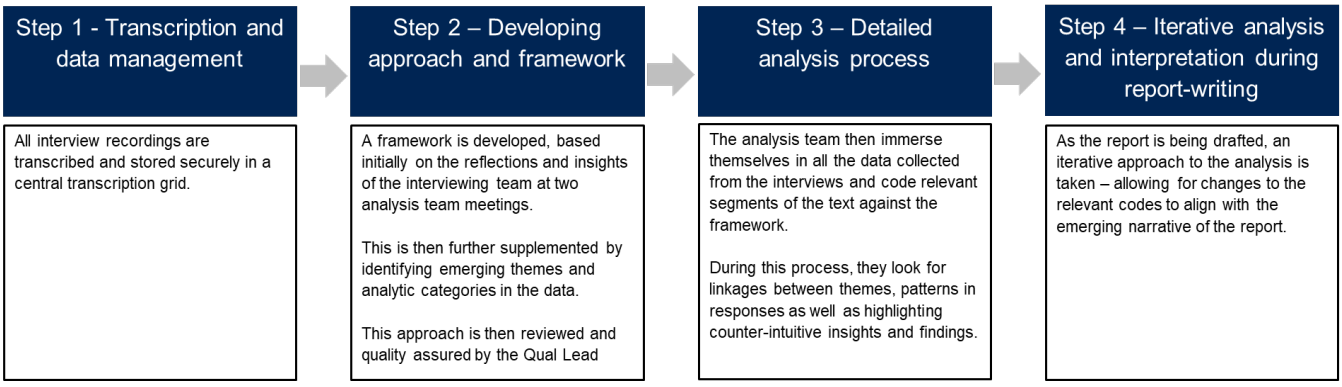
Table 38 Additional qualitative research – interview focus areas

Work strand	Target group	Key questions
Care home residents	Different types of care homes • Assisted living facility / Extra Care housing • Multi setting care home provider • Single setting care home provider with 24 beds or less • Single setting care home provider with 25 beds or more Different sources of care home funding • Self-funded • Partly self-funded • Local authority funded & surrendered all, or part of their pension and any benefits	• Experience before the schemes began. • EBSS AF application process • Communications around the EBSS AF scheme • Perceptions of support provided
Continuous cruisers	• 6 months – 3 years living on the water • 3 years – 9 years living on the water • 10 years+ living on the water	• Experience before the schemes began. • Awareness and communication around the scheme • Experiences of receiving and redeeming the voucher • Impact of support provided
Continuous cruisers stakeholder organisations	• Key stakeholder organisations: • DESNZ (2 interviews) • Canal & River Trust (3 stakeholders) • Paypoint • National Bargee Travellers Association	• The design of the policy • Stakeholder perceptions • Continuous cruisers awareness, understanding and perceptions • Compliance procedure design

3.5 Qualitative Analysis

The Ipsos team took a thematic approach to the analysis of both waves of research – where the data was used to identify and analyse recurring themes, patterns and concepts. This allowed the team to immerse themselves in the data. The flexibility of this approach ensured the structure of the discussion guide could be used as the coding framework, while allowing analysis to continue iteratively while the report was being drafted. During the second wave of the research, it also allowed for reflections back to the data from Wave 1 interviews to be incorporated. This is outlined in the four-step process below.

Figure 2 Analysis process



A number of other analytical approaches were considered, such as narrative analysis, which focusses in analysing the stories and narratives participants shared about their experiences with the energy schemes; or discourse analysis, which examines the language participants used to understand how they construct their experiences and perspectives. However, neither of these approaches would allow the team to immerse themselves in the transcripts and would not effectively and efficiently answer the evaluation questions.

Annex A4 Secondary data analysis

4.1 Secondary data sources and methodology

A list of relevant secondary data sources was first compiled and valued in terms of their relevance and applicability to the evaluation questions and contribution claims (see for a detailed overview of the methodology and a list of sources Section 1.5 and 1.6 above), We drew from a variety of sources, including, but not limited to, the Office for National Statistics (ONS) published data, Ofgem's data portal, the Bank of England's research, and published reports by DESNZ, such as the National Energy Efficiency Data-Framework report.

These data sources were then reviewed, and their findings or data were mapped to each relevant evaluation question to help triangulate, complement, and further explore our primary research findings. For the household consumption evaluation questions, the secondary data specifically used in the Stage 2 report included the relevant data pulled from Ofgem's data, Ofgem CIM Survey, the ONS Opinions and Lifestyle Survey, and KPMG audit data.

For examining the evaluation questions on household finances, the Opinions and Lifestyle Survey, FCA Financial Lives Survey, Ofgem data, and the Annual Fuel Poverty Statistics Report were used. For health and welfare, data from the Ofgem CIM Survey and the ONS Winter Survey, which tracks the impact of winter pressures in Great Britain, were analysed. Lastly, for analysing how energy suppliers may have been affected by the scheme specifically, their debt levels, and insolvency, published data from Ofgem, the National Audit Office, and internal Ofgem documentation on supplier market stability were utilised.

A limitation was there were some inconsistencies between data sources on definitions and thresholds for key terms, including, for example, between Ofgem data and the evaluation survey on the types of benefit consumers would need to receive to be classed as a 'benefit recipient'. Additionally, the Ofgem CIM survey used a threshold of up to £16,000 as the lowest annual household income bracket, whereas the Ipsos primary data survey used a threshold of up to £26,000, which is relevant for the outcome evaluation contribution analysis around the influence of energy affordability schemes on household consumption, health and welfare and household finance outcomes.

Appendix 1: Summary of bias assessments for contribution claims

A1.1 Contribution Claim HCCI

Type of bias risk	Risk of Bias	Explanation
Source credibility	Medium	Households are a credible source of concern levels; however, as the primary data was collected in summertime, self-reporting concerns over the winter period is likely to be affected by recall issues.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	High	The evaluation utilises self-reporting from surveys and qualitative interviews. It would be stronger if it was able to draw upon comparative or counterfactual evidence, modelling and/or peer-reviewed medical literature, but that was out of the scope of the evaluation.
Temporal coverage	High	There is no baseline data to compare against and the primary data being collected in summer may affect recall.
Evidence plausibility	Low	The evidence is sufficient to draw conclusions on the plausibility of the schemes' contribution to alleviating concern.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Medium	As respondents were asked about experiences in winter over the summer period, recall may have been affected by other factors such as concern around cost of living and contemporary experiences.
Optimism bias	High	Potential alternative scenarios are not assessed in detail.

A1.2 Contribution Claim HC1 and HC2

Type of bias risk	Risk of bias	Explanation
Source credibility	Low	Households are the most important source to consult on this theme.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	Medium	The evaluation would benefit from further evidence of household behaviours in response to the support.
Temporal coverage	High	There is no baseline to compare to (because the time period before the energy crisis is not uniformly comparable) and the data was collected in the summer following the intervention, which may affect recall.
Evidence convergence	Low	The survey, modelling and qualitative evidence converge in validating the ToC and assumptions around behaviours.
Evidence plausibility	Low	The logic behind the ToC has been proven to be sound in the review of the ToC.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	High	See above – recall may be affected by the fact that data was collected months after the intervention and the winter period in which it was expected to have an effect. Further, recall of quotidian experiences such as home heating may be subject to recall inaccuracies. However, given the concern placed in the energy crisis, it is possible that households have been recall of their heating experiences during this time.
Optimism bias	High	The counterfactual assessment is highly dependent upon household opinion and estimation of the no intervention scenario, which is limited.

A1.3 Contribution Claim HC3

Type of bias risk	Risk of Bias	Explanation
Source credibility	Low	The evaluation has been able to consult households with PPMs, which is the most important group to consult and has utilised observational data from Ofgem (a credible source). It has also consulted home energy experts on the plausibility and logic of the evidence.
Sample representativeness	Medium	The surveys were not able to cover a nationally representative sample of PPM households
Evidence coverage	Medium	The mix of observational data with self-reported evidence and the views of experts is good, but there are still some gaps in understanding of contribution with the evidence available
Temporal coverage	Low	The Ofgem data further provides an indication of baseline trends for disconnections prior to the intervention period.
Evidence plausibility	Medium	The evidence strands do not contradict each other, but they also do not provide a clear picture of the extent to which severity and prevalence of disconnections were prevented by the schemes.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Medium	The survey data was collected in the summer, which may affect recall of what happened in the winter, though disconnection may be memorable, thus increasing the accuracy of the recall.
Optimism bias	Medium	The lack of strong counterfactual evidence (due to the lack of a control group) means that we cannot confidently state what would have happened with disconnections in the absence of the scheme. It is therefore necessary to rely on household self-reporting about estimated severity in the absence of the schemes and on behavioural evidence from households about whether and how they used scheme support to limit disconnections.

A1.4 Contribution Claim HF1

Type of bias risk	Risk of Bias	Explanation
Source credibility	Medium	The counterfactual argument relies on self-reported perceptions / estimations of impact of a no intervention scenario.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	Low	The evaluation has been able to triangulate data from a mix of observational data from Ofgem, self-reported survey data (but elicited through different survey questions), expert views, and qualitative evidence, and has also conducted several statistical analyses to triangulate findings around heterogeneity.
Temporal coverage	Low	The Ofgem data further provides an indication of baseline trends for energy debt prior to the intervention period.
Evidence plausibility	Low	The logic behind the ToC has been proven to be sound in the review of the ToC.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Medium	The survey data was collected in the summer, which may affect recall of what happened in the winter, though disconnection may be memorable, thus increasing the accuracy of the recall.
Optimism bias	Medium	Weaknesses in the evidence, as with other contribution claims lies in the fact that the counterfactual argument relies on self-reported perceptions / estimations of impact of a no intervention scenario.

A1.5 Contribution Claim HF2

Type of bias risk	Risk of Bias	Explanation
Source credibility	Medium	The counterfactual argument relies on self-reported perceptions / estimations of impact of a no intervention scenario.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	Medium	The evaluation brings together evidence from the surveys, modelling and qualitative interviews, but there are limitations to all of these sources for this research question (see below) which make the lack of counterfactual or baseline data more prominent a gap.
Temporal coverage	Low	Whilst there is no longitudinal data / baseline evidence for the primary data collected, the secondary data available from Ofgem and the Annual Fuel Poverty Statistics Reports provide good temporal coverage indicative of baseline trends.
Evidence plausibility	Medium	The evidence strands do not contradict each other, but they also do not provide a clear picture of scheme contribution to limiting fuel poverty.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Medium	The findings and conclusions are very dependent on households' perceptions of their ability to pay which is highly likely to be affected by respondents' ability to isolate the drivers of household spending capacity.
Optimism bias	Medium	The weaknesses in the evidence, as with other contribution claims lies in the fact that the counterfactual argument relies on self-reported perceptions / estimations of impact of a no intervention scenario.

A1.6 Contribution Claim HF3

Type of bias risk	Risk of Bias	Explanation
Source credibility	Low	The evaluation has consulted a good sample of households and been able to explore their behaviours relevant to this contribution claim in detail.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	Low	The evaluation brings together modelling evidence, quantitative and qualitative primary data and secondary data.
Temporal coverage	High	There is no baseline data to compare against and the primary data being collected in summer may affect recall.
Evidence plausibility	Low	The assumptions underpinning the ToC are validated with the evidence.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Low	Whilst the survey required households to recall behaviours from the winter in the summertime, it was linked to more daily behaviours (around spending) and therefore less likely to be subject to recall challenges than other topics.
Optimism bias	High	Potential alternative scenarios are not assessed in detail.

A1.7 Contribution Claim HW1

Type of bias risk	Risk of Bias	Explanation
Source credibility	Medium	The relationship between level of concern around bills and the support provided should be direct, as long as specific assumptions (around awareness of the schemes) are valid. As the contribution claim is focused on household concern, household perceptions are the most credible source. However, as the primary data was collected in summertime, self-reporting on health and wellbeing over the winter period is likely to be affected by recall issues.
Sample representativeness	Low	The surveys are nationally representative with a high response rate.
Evidence coverage	High	The evaluation utilises self-reporting from surveys and qualitative interviews, but this is sufficient.
Temporal coverage	Medium	There is no baseline data to compare against; however a comparator is less critical for this contribution claim. The primary data being collected in summer may affect recall.
Evidence plausibility	High	There is insufficient evidence upon which to robustly validate the hypotheses underpinning the ToC around scheme effects on energy use behaviours and health and wellbeing.
Respondent bias	Low	Participants in the research have no incentive to provide biased responses.
Recall challenges	Medium	As respondents were asked about experiences in winter over the summer period, recall may have been affected by other factors such as concern around cost of living and contemporary experiences.
Optimism bias	High	Potential alternative scenarios are not assessed in detail.

A1.8 Contribution Claim ES1

Type of bias risk	Risk of bias	Explanation
Source credibility	Low	The evaluation has been able to consult energy suppliers and triangulate the evidence they provide with secondary evidence from a credible sources (Ofgem and National Audit Office).
Sample representativeness	Medium	The evaluation consulted the eight energy suppliers in GB, out of around 22.
Evidence coverage	Low	The evaluation is able to triangulate relevant evidence from multiple sources (energy suppliers, experts, households, secondary data) for this contribution claim.
Temporal coverage	Low	Whilst there is no longitudinal data / baseline evidence for the primary data collected, the secondary data available provides good temporal coverage indicative of baseline trends.
Evidence plausibility	Low	The evidence is sufficient to draw conclusions on the plausibility of the schemes' contribution to alleviating concern.
Respondent bias	Medium	Participants in the research may be incentivised to provide biased responses if they wish to influence policy.
Recall challenges	Low	Recall challenges are less likely given that suppliers were asked to recall events and situations that would have been documented as part of daily business practice.
Optimism bias	High	There is insufficient evidence within the evaluation to assess the contribution of the schemes to preventing insolvency relative to other potential drivers.

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