Department for
Business, Energy
& Industrial Strategy

EVALUATION OF THE RENEWABLE HEAT INCENTIVE (RHI)

Technical report of census of owner-occupier applicants to the domestic RHI: waves 1 to 24

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EVALUATION OF THE RENEWABLE HEAT INCENTIVE (RHI)

Technical report of census of owner-occupier applicants to the domestic RHI: waves 1 to 24

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Introduction

This technical report describes the approach taken to conducting waves 1-24 of the Domestic Renewable Heat Incentive (RHI)[1] applicant online census, and includes details on the census methodology, implementation and data analysis. It updates the previous technical report covering waves 1-12. The findings of the research are available from https://www.gov.uk/government/collections/renewable-heat-incentive-evaluation.

Evaluation of the Renewable Heat Incentive (RHI)

An independent evaluation of the RHI was commissioned by the Department of Energy and Climate Change (now the Department of Business, Energy and Industrial Strategy - BEIS)[2] and undertaken by NatCen Social Research, Eunomia Research and Consulting, the Centre for Sustainable Energy and Frontier Economics (the evaluation consortium).

The evaluation comprised three key strands of activity, focusing on:

- **Non-domestic** RHI applicants and possible applicants;
- Renewable heat **supply chain**[3]; and
- **Domestic** RHI applicants and Registered Social Landlords (RSLs) on and off the RHI scheme.

The outputs from the evaluation will help the Department for Business, Energy & Industrial Strategy (BEIS) to understand and assess how the domestic RHI is delivering relative to its objectives and to support development of the scheme. This evaluation will also help ensure that BEIS is conforming to principles of accountability, transparency and openness to scrutiny in policy-making.

To achieve these objectives a series of research projects focused on the domestic RHI were designed and delivered by the evaluation consortium. These were:

- A census of owner-occupier RHI accredited applicants;
- Qualitative research with owner-occupier RHI accredited applicants; and
- Qualitative research with Social Housing Provider (SHP) RHI applicants and possible applicants.

[1] The Renewable Heat Incentive (RHI) is a UK government scheme that aims to encourage take up of renewable heat technologies amongst domestic and non-domestic customers through financial incentives.
[2] As of July 2016, the responsibilities and functions of the Department of Energy and Climate change (DECC) became part of the newly formed Department for Business, Energy & Industrial Strategy (BEIS). This research was commissioned under DECC with the final report delivered under BEIS.
[3] The renewable heat supply chain includes manufacturers, sellers and installers of renewable heating technologies and suppliers of biomass fuel.

This technical report focuses entirely on the census of successful owner-occupier applicants to the domestic RHI scheme. The aim of this strand of the research was to better understand applicants' motivations for, and experiences of, installing a renewable heat technology and applying to the RHI scheme. The evaluation consortium contributed to this project in the following ways:

- NatCen Social Research, with extensive experience of conducting policy evaluations, led this survey project. They took responsibility for project management, research design, and analysis and reporting of research findings.
- Centre for Sustainable Energy (CSE) has extensive knowledge of the target population and took part in the questionnaire development and the reporting.
- Peak Answers conducted the fieldwork. This included the programming of and conducting of the online survey and day-to-day fieldwork management.

RHI Domestic applicant survey

Background and aims

The census of successful owner-occupier applicants to the domestic RHI was designed to provide BEIS, with an understanding of the motivations and experiences of applicants, both with regard to the technology they have chosen to install and their use of the RHI. To collect this information, a census of accredited applicants was conducted. The questionnaire aimed to assess applicants':

- Experiences of the domestic RHI application process;
- Motivations for, and barriers to, installing renewable heating technologies;
- Experiences of installing and using their renewable heating systems; and
- Applicants' decision-making around installing a new heating system and the impact the RHI had.

Sample design

The survey was implemented as a rolling census of domestic RHI applicants. This enabled BEIS to obtain feedback on the RHI while the scheme was being implemented. Surveying applicants soon after their application was also intended to improve response rates (since the greater the time lag, the less likely applicants would be to retain interest).

Sample frame

The sample frame was based on a dataset of accredited applications provided by Ofgem, including applicants' contact details, information on applicants' household and property, and specifics of the installed technology.

Social and private landlords were excluded from the survey because their motivations and experiences were believed to differ sufficiently from owner-occupiers to require separate analysis, and because sample sizes were too small to allow such analysis.

Between 9 April 2014 and 30 April 2016, 35,495 accredited applications from 33,281 owner-occupiers were provided in the Ofgem datasets (see Table 1)[4].

[4] As explained later, there were more applications than applicants, because applicants could apply to the scheme to cover more than one installation – e.g. for a solar thermal system plus a ground source heat pump.

Table 1: Number of applications and applicants

Number of applications by the same applicant	Accredited applications[5]	Applicants
1	31,107	31,107
2	4,282	2,141
3+	106	33
Total	**35,495**	**33,281**

New and legacy applicants

Until April 2015, the domestic RHI was open to applicants that had previously received the Renewable Heat Premium Payment (RHPP) for their installation, as well as to applicants that commissioned their installation before the opening of the domestic RHI on 9 April 2014. For the purposes of this report, all these installations are considered 'legacy' installations. In contrast, installations that were commissioned on or after 9 April 2014 were considered 'new' installations.

From April 2015, applications relating to legacy installations were no longer permitted. Overall, 19,045 legacy and 16,450 new applications were received between 9 April 2014 and 30 April 2016 (Table 2).

[5] Note that these figures are based on population data and include applications from applicants that did not provide an email addresses and applications from applicants that participated in the pilot.

Table 2: Response rates by application type

Application type	Accredited applications	Households invited to survey[6]	Valid responses	Response rate
Legacy[7]	19,045	16,732	7,968	48%
New[8]	16,450	15,250	5,524	36%
Total	**35,495**	**31,982**	**13,492**	**43%**

Sampling strategy

Every owner-occupier applicant to the RHI was invited to take part in the census. In order to reduce respondent burden, applicants that had more than one installation accredited were approached only once. Where more than one application from the same applicant was accredited in a single month, we randomly selected one application to be the focus of the survey. Applicants that successfully applied for further installations after being invited to take part in the survey were not invited to participate again.

As the Ofgem datasets do not contain unique applicant identifiers, email addresses were used to identify applicants with multiple applications.

Following the completion of the survey a more extensive retrospective process identified multiple applicants using both phone numbers and email addresses. We found that 335 applicants had successfully completed more than one application, using different email addresses, and were invited more than once to the survey. In order to consistently deal with these applications we:

- Excluded from consideration in analysis any responses that were submitted by applicants that had been invited to the census in a previous month.
- Selected at random one invitation if an applicant had submitted multiple applications (including their first) in the same month and only considered responses to that selected application.

This approach applied the criteria we would have used to select applications for participation in the census had we used both email addresses and phone numbers from the beginning.

Overall, between 9 April 2014 and 30 April 2016, 31,107 applicants submitted single applications, 2,141 applicants submitted exactly two applications and 33 applicants submitted more than two applications (see

Table 1).

[6] Applicants that did not supply an email address in the application were not invited, nor were any of the 407 applicants that took part in the survey pilot. Also, applicants that were accredited for more than one renewable heating installation in the same month were invited to answer questions in relation to only one of these, selected at random.

[7] Legacy applications relate to installations commissioned prior to 9th April 2014, when the domestic RHI scheme was launched.

[8] New applications relate to installations commissioned on or after 9 April 2014.

Applications that did not include an email address (469, or 1.3 per cent), and could not therefore be e-mailed a link to the online survey, were excluded from the survey (see Table 3), although the applications were included in the population to which the results were weighted when generating the calibration weights. Consequently, there was a very small risk that the views of applicants that do not have email addresses were under-represented in the survey (see section on calibration weighting below).

Table 3: Applications without email addresses

Wave	Month	Accredited applications	Accreditations without email address	Per cent without email address
Pilot	April 2014	395	0	0.0%
1	May 2014	694	12	1.7%
2	June 2014	1,000	25	2.5%
3	July 2014	2,411	36	1.5%
4	August 2014	2,255	47	2.1%
5	September 2014	2,053	0	0.0%
6	October 2014	2,978	99	3.3%
7	November 2014	2,356	40	1.7%
8	December 2014	2,776	22	0.8%
9	January 2015	2,177	23	1.1%
10	February 2015	1,747	13	0.7%
11	March 2015	2,915	27	0.9%
12	April 2015	1,318	7	0.5%
13	May 2015	1,030	16	1.6%
14	June 2015	1,989	16	0.8%
15	July 2015	1,343	12	0.9%
16	August 2015	735	10	1.4%
17	September 2015	960	12	1.3%

18	October 2015	698	8	1.1%
19	November 2015	645	9	1.4%
20	December 2015	739	6	0.8%
21	January 2016	610	7	1.1%
22	February 2016	585	10	1.7%
23	March 2016	569	7	1.2%
24	April 2016	517	5	1.0%
Total		**35,495**	**469**	**1.3%**

Finally, 714 originally accredited applications were later withdrawn. Although these applicants were invited to take part in the census and may have replied, we did not consider the applications when calculating weights and analysing data. Note that figures for waves 1-12 in Tables 3 and 4 differ slightly from those reported in the wave 1-12 report published in January 2016. This is due the withdrawal of an additional 210 applications from waves 1-12 after the time of reporting.

Fieldwork

Fieldwork procedures

Fieldwork for the census (excluding the pilot) was conducted between 1 June 2014 and 15 July 2016, as an online questionnaire (also called computer-assisted web interviewing, CAWI)[9]. A sample was drawn monthly from all owner occupiers accredited to the scheme in the previous months. One application was selected at random from applicants with multiple applications in that month.

Peak Answers sent potential respondents an invitation email outlining the background and objectives of the census, as well as information about how the findings would be used. Non-responders were sent two reminders via email. No incentive was offered.

Pilot

A pilot was carried out between 30th May and 11th June 2014 to test the question wording and routing. All 407 early applicants that applied in the first month of the scheme (applications received between 9th April and 30th April 2014) were invited to take part. 12 of these applicants later withdrew their applications and are no longer considered part of the sample frame. Feedback from the pilot was incorporated in the final questionnaire.

[9] CAWI is a surveying technique in which the survey is presented on a website. CAWI allows for the use of complex routing, in which the flow of the questionnaire is based on answers provided or information known about the participant.

In addition, analysis of the responses to the first full survey wave (running in June 2014) prompted changes to 14 questions, and the inclusion of additional answer categories to four questions.

The questionnaire

The questionnaire was developed by NatCen and the Centre for Sustainable Energy (CSE) with input from policy officials and analysts from BEIS and the scheme delivery partner, Ofgem.

The questionnaire for waves one to nine consisted of 113 questions, although not all respondents were routed to all questions, depending on answers given to previous questions. The survey took respondents around 30 minutes to complete.

After wave nine the questionnaire was revised substantially by NatCen and BEIS to reduce response time. 47 questions were dropped and rarely used response categories deleted. As a result of these changes data for some questions are only available for waves 1-9.

Quality assurance

Scripting is the process of programming the questionnaire, including its routing for the online survey system. The scripting was carried out by Peak Answers, on the basis of the questionnaire supplied by NatCen[10]. Once the scripting was completed it was checked by the programmer, a second programmer and the project manager. The survey script was then run through an automated system that created dummy surveys to check routing, filters and response variable types (for example, multi-coded answers). Once internal checks at Peak Answers were complete, NatCen researchers tested the questionnaire for final approval. This process ensured that the online survey correctly routed respondents through the questionnaire.

Confidentiality

The invitation email explained that participation in the research was voluntary and that any information respondents provided would remain confidential and would not be passed to anyone outside NatCen in a form that could be used to identify them. Respondents were provided with a dedicated email address that they could contact if they had queries.

Data used and collected in this study were treated as personal and confidential data, and transferred and stored in accordance with ISO 27001:2005 Information Security Management. Robust procedures governing the storage, access and handling of information were adhered to by the research team. Compliance with procedures was monitored through reporting of issues, internal audits and ISO surveillance visits every six months.

Response rates

Not all participants completed the questionnaire, although an examination did not find any particular pattern or questions which triggered respondents to drop out. For the purposes of analysis, a cut-off point was determined at which point a respondent's response was treated as valid and included in analysis. This point was just over half way through the survey ("Did you face any of the following difficulties in meeting the requirements of the Renewable Heat Incentive (RHI) scheme?"). Responses that did not reach this question were treated as invalid and not included in the analysis.

[10] Scripting was carried out using Nebu, an online survey and sample management software.

The overall response rate for waves 1-24 of the survey was 42%. More detailed information on response can be found in the tables below. Table 4 shows the response rate for each wave of the survey as well as the number of accredited applicants, invited households and valid and invalid responses.

Table 5 shows the response rate by the technology installed by the applicant. Table 6 reports the response rate by whether applicants had submitted a single or multiple applications.

Table 4: Sample frame and response rates

Wave	Month of RHI accredita-tion	Accredited applications	Households invited to census	Valid responses	Invalid partial responses[11]	Response rate
Pilot	April 2014	395				
1	May 2014	694	637	299	18	47%
2	June 2014	1,000	911	430	60	47%
3	July 2014	2,411	2,189	1,197	128	55%
4	August 2014	2,255	2,057	1,106	94	54%
5	September 2014	2,053	1,919	935	94	49%
6	October 2014	2,978	2,560	1,263	119	49%
7	November 2014	2,356	2,112	921	112	44%
8	December 2014	2,776	2,578	1,003	160	39%
9	January 2015	2,177	2,013	650	94	32%
10	February 2015	1,747	1,583	708	79	45%
11	March 2015	2,915	2,692	1,164	146	43%
12	April 2015	1,318	1,221	453	60	37%
13	May 2015	1,030	942	348	49	37%

[11] See “Partial responses” above.

14	June 2015	1,989	1,847	696	95	38%
15	July 2015	1,343	1,205	401	71	33%
16	August 2015	735	657	219	38	33%
17	September 2015	960	869	322	34	37%
18	October 2015	698	637	209	23	33%
19	November 2015	645	586	203	17	35%
20	December 2015	739	683	268	32	39%
21	January 2016	610	561	194	30	35%
22	February 2016	585	530	189	23	36%
23	March 2016	569	521	168	24	32%
24	April 2016	517	472	146	21	31%
Total		**35,495**	**31,982**	**13,492**	**1,621**	**42%**

Table 5: Response rates by technology

Technology	Accredited applications	Households invited to survey	Valid responses	Response rate
Air source heat pump (ASHP)	11,933	10,847	4,833	45%
Biomass boiler	10,947	10,283	3,830	37%
Ground source heat pump (GSHP)	5,815	5,375	2,325	43%
Solar thermal	6,800	5,477	2,504	46%
Total	**35,495**	**31,982**	**13,492**	**42%**

Table 6: Response rates by number of applications per applicant

Number of applications by applicant	Accredited applications	Households invited to survey	Valid responses	Response rate
Single application	31,107	30,037	12,520	42%
Multiple applications – same month[12]	2,519	1,174	598	51%
Multiple applications – later month[13]	1,869	771	374	49%
Total	**35,495**	**31,982**	**13,492**	**42%**

Weighting

Weighting was used to ensure that the responses achieved through the survey were as representative as possible of the population from which the sample was drawn. While this was a census, the treatment of multiple applicants and the fact that some RHI applicants may have been more likely to respond to the survey than others made the use of weighting appropriate.

First, a selection weight was used to offset the effect of unequal selection probabilities which resulted from our decision to approach any applicant only once, even if they successfully submitted several applications. Then, a calibration weight was calculated to ensure that the weighted sampling distribution matched the population totals on key variables.

Most questions of the domestic applicant census related to a specific heating installation installed by the applicant, such as whether degression influenced the timing of the installation. Some questions, however, focused on the applicant, for example whether the applicant was aware of tariff degression. In order to analyse these questions correctly, two weighting strategies were used. The first calculated weights to reflect the population of *applications*, the second to reflect the population of *applicants*.

Consequently, the majority of questions were weighted to the population of applications. This strategy was chosen to allow examination of responses by technology type and other aspects related to the specific installation rather than the applicant. Only the following four questions were weighted to the population of applicants:

- How did you find out about the Renewable Heat Incentive (RHI) scheme?
- Overall, how would you rate the usefulness of information on the Renewable Heat Incentive (RHI) provided by each of the following?

[12] This is where an applicant made more than one application in the same month and one was selected at random.
[13] This is where an applicant made more than one applications across several months and the first application was chosen.

- Are you aware that the Renewable Heat Incentive (RHI) tariff may reduce (degress) in the future?

- Did you access information on installing renewable heating systems in your home, from any of the following sources?

Application-level weighting

Selection weights

Applications from single and multiple applicants had different selection probabilities. All single-applicant applications were invited to the census and received a selection weight of one.

Where an applicant submitted multiple applications, the applicant was invited only in relation to one of these. Consequently, applications were weighted to reflect the number of applications made by an applicant. To avoid extreme weights and because very few applicants made applications for more than two installations, all multiple-applicant applications were given a selection weight of two.

The decision to select applicants only in the first month in which they submitted applications to the RHI may have introduced some bias. This could be either because applicants that submitted several applications in different months had views that were systematically different from others, or because they were more likely to submit applications for particular technologies first. On reviewing the data, we found that the views of solar thermal applicants with more than one heating system may have been underrepresented[14]. However, the impact of this is likely to be minimal, as the proportion of affected applicants was small.

Calibration weights

Selection weights were adjusted using calibration weighting. This process adjusted the weighted distribution of certain variables to the population totals. This reduced non-response bias where the variables used for calibration were related to the survey participation.

Calibration weighting was limited by the availability of information in the population sample frame. Calibration weighting cannot overcome bias arising from factors that were not measured in both the population and the achieved sample. Non-response bias could have been introduced if the people who did not participate in the survey had different views to those who did, and the likelihood of taking part was not related to factors included in the calibration weighting. For example, if non-response had been due to the technology installed by an applicant and their age, the calibration weight would have been able to overcome bias from the first factor, as technology type was included as a calibration weight (see below). However, the bias linked to the age of the applicant could not have been adjusted for, because the information was not available for both population and the achieved sample.

The following variables were included in the calibration weighting:

- Application type

[14] This is because where applicants submitted more than one application, in different months, of which one was for a solar thermal heating installation, the solar thermal application tended to be the later one, and thus wouldn't be included in the census. Solar thermal applicants were more likely to install multiple renewable heating technologies, because solar thermal heating only heats water, while the three other technologies can also heat space.

- Type of technology
- Type of property
- Floor space (square metres) divided in five categories
- Self-build / non self-build
- Number of occupants in property
- Previous heating system.

These variables were chosen by assessing the response rates of different participant groups, and based on previous experience with surveys run with this population.

Table 7 presents the estimates of the weighted and unweighted sample compared to the population distribution.

Table 7: Application-level weighting

	Population (%)	Unweighted sample (%)	Weighted sample (%)
Type of application			
New	46.3	41.0	46.3
Legacy	53.7	59.0	53.7
Technology type			
Air Source Heat Pump	33.6	35.8	33.6
Biomass	30.8	28.4	30.8
Ground Source Heat Pump	16.4	17.2	16.4
Solar thermal	19.2	18.6	19.2
Type of property			
Flat + Maisonette + Terrace house	4.4	4.4	4.4
Detached house or bungalow	82.5	82.6	82.5
Semi-detached house or bungalow	13.0	13.0	13.0

Floor space in square metres			
Less than 100 m^2	8.9	9.1	8.9
100-149 m^2	23.2	24.8	23.3
150-199 m^2	23.4	24.3	23.4
200-249 m^2	17.5	17.1	17.5
250 m^2 or more	27.1	24.7	27.1
Self-built			
Yes	18.1	17.3	18.1
No	81.9	82.7	81.9
Number of occupants			
0 – missing	20.6	19.1	20.6
1	5.6	5.9	5.6
2	33.9	40.5	33.9
3	15.3	14.0	15.3
4 or more	24.5	20.5	24.5
Previous system			
Boiler	65.4	67.8	65.4
First Heating	22.1	20.7	22.1
Other	12.5	11.5	12.5

Applicant-level weighting

While the majority of questions were weighted to the population of applications, four questions were weighted to the population of applicants. The applicant-level weighting followed the same approach of calculating selection and calibration weights.

Selection weights

Every applicant had a selection weight of one, as every applicant was invited exactly once.

Calibration weights

The calibration weighting used the same variables for weighting as the application weighting. For the two-thirds of single-application applicants this resulted in the same categorisation as the categorisation for the application weight. Multiple-application applicants were assigned as follows:

- Where all applications by the applicant had the same value for a weighting variable (for example, if all applications were for biomass boilers), we classified the applicant as we would a single applicant with that value.
- Where applicants applied for different technology types, in the majority of cases one of these was for a solar thermal installation and other one for a space heating technology (biomass boiler, ground source heat pump or air source heat pump). We therefore created a new classification of 'solar thermal and another technology' for these applications. We also included within this the small proportion of applicants that applied for different technology types that did not include a solar thermal installation.
- For all other weighting variables, if the values from multiple applications differed for a single applicant, we assigned a single value to each applicant. To do that, we first checked whether the applicant had replied to the census about one of their applications. If they had, we assigned the values from that application. If they hadn't, we then checked whether the applicant had been invited to the census in regards to one of their applications and assigned values from that application. Finally, in the rare cases where we invited an applicant twice (see section Sampling strategy) and they didn't respond to either, the earliest submission date took precedence.

The following variables were included in the calibration weighting:

- Application type
- Type of technology
- Type of property
- Floor space (square metres) divided in five categories
- Self-build / non self-build
- Number of occupants in property
- Previous heating system.

Table 8 presents the estimates of the weighted and unweighted sample compared to the population distribution.

Table 8: Applicant-level

	Population (%)	Unweighted sample (%)	Weighted sample (%)
Type of application			
New	47.0	41.0	47.0
Legacy	53.0	59.0	53.0
Technology type			
Air Source Heat Pump	32.7	34.4	32.7
Biomass	30.8	27.3	30.8
Ground Source Heat Pump	16.0	16.5	16.0
Solar thermal	14.4	15.8	14.4
Multiple technologies: Solar Thermal + Others	6.1	6.0	6.1
Type of property			
Flat + Maisonette + Terrace house	4.5	4.4	4.5
Detached house or bungalow	82.4	82.6	82.4
Semi-detached house or bungalow	13.2	13.0	13.2
Floor space in square metres			
Less than 100 m^2	9.0	9.1	9.0
100-149 m^2	23.3	24.8	23.3
150-199 m^2	23.4	24.3	23.4
200-249 m^2	17.4	17.1	17.4
250 m^2 or more	27.0	24.7	27.0
Self-built			
Yes	17.5	17.3	17.5
No	82.5	82.7	82.5

Number of occupants			
0 - missing	20.0	19.1	20.0
1	5.6	5.9	5.6
2	34.3	40.5	34.3
3	15.4	14.0	15.4
4 or more	24.6	20.5	24.6
Previous system			
Boiler	66.3	67.8	66.3
First Heating	21.3	20.7	21.3
Other	12.4	11.5	12.4

Analysis

Coding and data editing

Coding is the process of assigning open-text answers to existing or newly created response categories for survey questions. Coding was carried out where a survey question offered a number of response categories plus an open-text 'Other' option. The responses to 'Other' were reviewed and either coded to an existing response category, or, if many respondents gave a similar answer, to a newly created response category.

The open-text 'Other' responses of waves one to nine were coded by Peak Answers. However, because the coding was a resource intensive process and was found to have a negligible effect on overall responses (most categories did not change and for those that did, no category changed by more than two percentage points), responses from wave 10 onwards were not coded.

Coding was carried out using code frames, which set out existing and new response categories. NatCen provided the code frames to Peak Answers on the basis of a first analysis of open text answers, and the frames were then updated by Peak Answers as appropriate. Where coding created new categories, these were used in the data analysis but were not added to the questionnaire in order to ensure comparability between waves.

All coders have been trained to industry quality standards and quality was monitored on every project. A minimum of 10% of each coder's work was checked on each project they worked on.

Significance testing

The analysis presented in the Domestic Census wave 1-24 final report focused on differences by technology type and over time. Differences between groups were only reported where significance tests carried out in SPSS 21 found the differences to be statistically significant at the 95% confidence level. Differences over time were only presented if they were statistically significant at the 95% confidence level and where there was a clear pattern to the changes over time. This was done to ensure that we were confident that any differences in responses were reflective of differences in the population rather than being an effect of sampling.

Assessment of RHI's influence on installations

The report also presented results of analysis exploring factors characterising "additional" RHI applicants.

Analytical approach

The analysis used logistic regression to explore how strongly a range of factors were correlated with applicants being additional or not additional. A logistic regression provides the "marginal effect" of a factor (or predictor variable) on the likelihood that an applicant is "additional".

Applicants were defined as “additional” if they stated that without the RHI they would not have installed a renewable heating system. This includes those who reported that without the RHI they would have either a) not installed a new heating system or b) installed a conventional system. Applicants defined as “not additional” indicated that they would have installed a renewable heating system even without the RHI.

The marginal effect of a factor is the percentage increase in likelihood that an applicant is “additional” considering that factor, and holding other factors at their average value. This sheds light on the importance of motivations and characteristics associated with an applicant being “additional” in the light of other motivations and characteristics. For example, the results of the model showed that the marginal effect on the likelihood of being “additional” of grant funding prompting the installation a renewable heat technology is 0.11. This means that average applicants being motivated by grant funding are 11% more likely to be “additional” than average applicants who were not motivated by grant funding.

Outcome variable

The outcome variable was based on a survey response which asked applicants to indicate whether they believe they would have installed the renewable heat technology even without the RHI. That measure thus relies on self-reported perceptions of expected behaviours in the absence of the scheme. The results should be interpreted accordingly.

Predictor variables

The analysis used logistic regression to explore how strongly the following factors correlated with applicants being additional or not additional:

- region and locality;
- property characteristics;
- household demographics;
- previous heating system; and
- motivations for installation

To select the specific covariates for the regression model, correlations with the outcome variable of an extensive initial list of covariates were examined. This list included all variables which related to the five factors listed above. Covariates with a Chi-squared *p*-value of 0.05 or less were included in the model. Following the analysis, a multi-collinearity test was carried out, but no issues of multi-collinearity (defined as having a variance inflation factor (VIF) of 10 or greater) were detected.

Population included in the model

The analysis included census responses relating to installations commissioned after the start of the domestic RHI scheme on 9 April 2014 (so-called *new* RHI applications, as opposed to legacy applications). Responses from waves 1 to 24 were included in the analysis. The analysis included use of data weighted at the applicant level.

Comparability with previous reports

Report on waves 1-12

In January 2016 we published a report on waves 1-12 of the domestic applicant census alongside a technical report. For two reasons the results presented in this technical and the wave 1-24 final report are marginally different from those presented in the corresponding wave 1-12 reports. These differences have no implications for the validity, direction, magnitude or significance of the findings presented previously. We are presenting them here for the purpose of completeness.

- When we reported on waves 1-12, the cut-off date for responses to wave 12 had been reached. However, in line with our practice in earlier and subsequent waves, we kept the survey open for 'late responders'. As a result, the wave 1-24 report includes a small number of additional responses, received after we extracted the data for the wave 1-12 report data analysis.

- The number of accredited applications, invited households and valid responses has reduced as a result of removing additional 'cancelled applications'. As noted above, at any time, a small number of applications are cancelled by the applicant. When we reported on waves 1-12 we had removed 368 such applications from the dataset, including any survey responses we may have received. For the current report, we have removed 210 additional applications from waves 1-12, which were cancelled after the wave 1-12 report was completed.

Interim report of waves 1-4

In November 2014, we also published an interim report of the findings of waves 1-4 of this census. There are small differences in the numbers reported on waves 1-4 in the interim report, the numbers in the waves 1-12 report, and the numbers presented here. In addition to the two reasons for differences between the wave 1-12 and the wave 1-24 reports described above, two further reasons account for differences in the numbers presented in the interim report and here. Again, these differences are of no consequence for the validity, direction, magnitude or significance of the findings presented in the interim report and are presented for the purpose of completeness only.

Changes in reported accreditations, invited households and responses

- Better identification of multiple applicants has led to the removal of a small number of responses from the final dataset. As we noted above, we have retrospectively identified a small number of applicants that submitted multiple applications using different email addresses. In the interim report, these multiple applicants would have counted as single applicants. In order to improve our findings, we have retrospectively applied our selection criteria for multiple applicants to those newly identified multiple applicants and removed any responses received from those that should not have been invited. This results in a marginally lower number of valid responses in the waves 1-24 report for waves 1-4.

Applicant weighting

Finally, for the interim report we calculated only an application weight. Responses to questions that we deemed to be about the applicant rather than the application were reported unweighted.

Additional Analysis reports

During the data collection process, NatCen produced a number of additional analysis reports exploring topics of particular policy interest to BEIS. The analysis used unweighted data to the extent it was available at the time of the reporting. Due to the use of unweighted data, these reports have not been published as standalone publications. Key findings from these analyses can be found in the report. The methodologies are provided below to illustrate the further analysis that the data could support. The reports covered:

- Applicants least able to pay (using data from waves 1-15) – slide 27 of main report
- Applicants on the gas network (using data from waves 1-18) – slide 28 of main report
- Differences and similarities between Scotland, Wales and England (using data from waves 1-21) – slide 29 of main report
- Determinants of technology choice (using data from waves 1-18), – slide 30 of main report and
- Factors influencing satisfaction with renewable heat technology (using data from legacy applicants in waves 1-18) – slide 31 of main report

Differences by ability to pay, gas network connectivity, and national location

Reports on applicants least able to pay, applicants on the gas network and the comparison of British nations compared survey responses according to the relevant categorical break variable using cross-tabulations. Differences between groups were tested for statistical significance (with *p* set to 0.05) using a logistic regression.

Determinants of technology choice

The analysis examining determinants of technology choice explored factors correlated with each of the four technologies supported by the RHI.

Analytical approach

The analysis used multinomial logistic regression and results were presented as marginal effects (see above for an explanation of marginal effects). This method tests whether each predictor variable increases or decreases the likelihood that an individual chooses one type of technology over another, while holding other predictor variables at their means.

Outcome variable

Technology type, a categorical variable with four possible states (biomass, air source heat pump, ground source heat pump and solar thermal) was set as outcome variable.

Predictor variables

Using theoretical considerations as a starting point, an initial list of variables from the following domains was drawn up: region and locality; property type and housing characteristics; household demographics; the previous heating system; motivations for RHT installation and installation time relative to RHI tariff degressions. Each variable's correlation with the outcome variable was then examined for evidence of a linear relationship between the dependent and

each independent variable. Covariates with a chi squared *p*-value of 0.05 or less were included in the model.

A number of variables were defined in the analysis process, as follows:

- The urban-rural indicator was based on the installation postcode and the ONS urban / rural classification system for England and Wales, and Scotland. The ONS classification system was simplified to a binary indicator in order to merge the different Scottish and English/Welsh systems. Invalid postcodes were considered missing.
- This binary indicator was interacted with an on/off gas indicator for the installation postcode provided by Ofgem scheme data, creating four indicators: urban off grid, urban on grid, rural off grid and rural on grid.
- The 'previous fuel' variable was collapsed into three categories due to insufficient numbers in some of the categories: (1) Oil or LPG; (2) gas, electricity, biomass or coal; (3) no previous system/fuel (RHT is first).
- Total installed capacity information was made available in the sample file. Due to concerns with outliers the top and bottom 2.5% of cases.
- To account for the role of tariff degression in technology choice, we used commissioning date from the survey data and degression announcement dates to derive a variable indicating whether a respondent commissioned their RHT in the months between a degression announcement and the implementation of a degression.

Following fitting the model, variables were examined for multicollinearity (defined as variables inflating variance by a factor of 10 or more). High multicollinearity can lead to misleading and unstable coefficients and increased variance. In the main model, two factor variables, 'length of stay in current home' and 'household income', were collapsed into broader categories to avoid high collinearity.

'Total installed capacity' was identified as of theoretical interest and as having a statistically significant correlation with the outcome variable. However, due to concerns about whether installed capacity was in fact endogenous to technology type, it was excluded from the main model, and the implications of including and excluding the variable were discussed in the report.

Population included in the model

The analysis included all new applicants that took part in the census in waves 1 to 18.

Factors influencing satisfaction with technology and installation

The exploration of factors influencing satisfaction with renewable heat technologies used linear regression to explore satisfaction with the technology and the installation process.

Analytical approach

The relationship between outcome and predictor variables was examined using ordinary least squares (OLS) regression, which tests the correlation of the outcome variable with each predictor variable while holding all other predictor variables at their means.

Outcome variables

The main model in this analysis focused on overall satisfaction with the renewable heat technology (SAT1). Once the analysis model was finalised, it was re-run using the other satisfaction variables of interest to identify any differences in drivers of satisfaction:

- satisfaction with noise levels (EB5_1)
- satisfaction with how the installation looks (EB5_2)
- satisfaction with reliability (EB5_3)
- satisfaction with the ease of understanding system controls (EB5_4)
- satisfaction with the ease of adjusting controls (EB5_5) and
- overall satisfaction with the temperature achieved (EB7_3).

Predictor variables

Predictor variables were initially derived from theory, covering region and locality; property type and housing characteristics; household demographics; the previous heating system; experience of cold weather; type and age of technology; equipment and installation costs; motivations for RHT installation; and barriers to installation. Experience of cold weather was estimated by the average number of air frost days per month since commissioning of the heat installation in the region of the installation, using Met Office data[15].

To select specific predictor variables, correlations with the main outcome variable – SAT1 – was examined and variables displaying a chi squared p-value of 0.05 or less were included in the regression model.

After fitting the model, multicollinearity between variables was examined, but no variables with a VIF of 10 or greater were found.

Population included in the analysis

The analysis included only legacy applicants that responded to waves 1-18 of the census. For these legacy applicants on average 29 months lay between commissioning their technology and participating in the census, compared to 2.5 months for new applicants.

Determinants of additionality

This analysis was originally carried out as Additional Analysis, but updated in the context of the final report. The detail of the updated analysis is described above. The original analysis was identical except for the population included, which covered only census respondents to waves 1 to 18.

15 See: http://www.metoffice.gov.uk/climate/uk/summaries/datasets.

Customer journey routes

The purpose of this analysis was to explore the data collected in waves 1-9 of the census on possible steps taken as part of the customer journey, and their order. The aim was to examine routes to RHT installation / RHI application taken by different applicants.

Analytical approach

Our original approach to analysis explored the use of Latent Class Analysis (LCA) to group respondents based on the steps they took in the process of installing their RHT and applying for RHI and the order in which they took them. Following difficulties encountered with this approach due to the large number of routes taken by applicants, we explored three targeted questions:

- Question 1: How do those who's entry point to the RHI journey was "heard about the benefits of RHTs" first compare to those who did so later on?
- Question 2: How to those who's entry point to the RHI journey was "heard about the benefits of RHTs" differ from those who's entry point was "Needed to replace heating system".
- Question 3: Do applicants who take "secured finance" as a step in their customer journey differ from those who do not?

These questions were explored by examining differences in survey responses between the different groups in each question using cross-tabulations.

Due to concerns over the reliability of responses to the customer journey step "secured finance" (only 36 per cent of those who reported using finance to pay for their RHT listed "securing finance" as a step in their customer journey) we did not carry out the analysis on Question 3.

Population included in the analysis

All analysis only considered census respondents from waves 1 to 9, since the questions on which the analysis was based were removed after wave 9. In addition, analysis of Question 2 was limited to respondents who reported "heard about the benefits of RHTs" or "needed to replace heating system" as the first step they took in their customer journey.

Annex 1: Questionnaire

Table A.1 Questionnaire

Variable	Question	Possible Answers	Changes after Wave 9	Asked of new or legacy applicants
BK1	Are you the owner occupier of the property with the {technology type} installation?	• No • Yes	No change	New and legacy
Intro2	First, we have a few questions about how you use your {technology type} and how you found out about renewable heating technologies			New and legacy
HS1i	What is your {technology type} used for?	• Space heating only • Space and water heating • Water heating only	No change	New and legacy
NG	Is your home connected to the National Gas Grid?	• Yes • No • Don't know	No change	New and legacy
AW7i	Which of these statements best describes how you selected your new heating system?	• I only considered renewable heating technologies, and just one type of renewable technology (e.g. {technology type}) • I only considered renewable heating	No change	New and legacy

		technologies but explored more than one type of renewable technology (e.g. solar thermal systems or biomass boilers) • I considered both conventional heating systems and renewable heating technologies • Don't know		
AW7ii	Which of these statements best describes why you considered both conventional and renewable heating systems?	• I was aware of renewable heating systems and always considered these alongside conventional heating systems (including different models) • I was intending to install a conventional heating system but was made aware of renewable heating systems	**AMENDED ANSWER OPTIONS:** • I was aware of renewable heating systems and always considered these alongside conventional heating systems • I was intending to install a conventional heating system but was made aware of renewable heating systems	New and legacy
AW1	Did you access information on installing renewable heating systems in your home, from any of the following sources?	**Government, charity or advisory organisation** • National government including DECC (e.g. guidance published on a government website) • Ofgem • Your council/local authority • A charity or not for profit organisation	**AMENDED ANSWER OPTIONS:** **Government, charity or advisory organisation** • National government including DECC (e.g.	New and legacy

	• Energy Saving Trust • The Energy Saving Advice Line (ESAS) or Home Energy Scotland **Heating industry or professional** • A tradesperson or professional (e.g. builder, plumber or architect) • Heating system manufacturer • An energy supplier • Green deal assessor/advisor or Energy Advisor • An installer of renewable heating systems • Trade show **Friends/neighbours** • Friends/Family • A neighbour **Retailer** • Supermarket/Department Store/DIY Store **Media/website** • Television or radio programme • Newspaper or magazine article • Website • None of the above • Other	guidance published on a government website) • Ofgem • Energy Saving Trust • The Energy Saving Advice Line (ESAS) or Home Energy Scotland **Heating industry or professional** • A tradesperson or professional (e.g. builder, plumber or architect) • Heating system manufacturer • Green deal assessor/advisor or Energy Advisor • An installer of renewable heating systems • Trade show **Friends/neighbours** • Friends/family or neighbour[16] • Newspaper or magazine article • Website

[16] Due to an oversight, the category “A neighbour” continued to be presented in the post-wave 9 survey, alongside “Friends/family or neighbour”. Responses to the “A neighbour” category were recoded to the “Friends/family or neighbour” category for analysis.

			• None of the above • Other	
AW1b	Which other source(s) have you accessed information on renewable heating systems from?	Open text response	No change	New and legacy
AW4	Overall, how useful was the information you received from each of the following?	List responses selected at *AW1*: • Very useful • Quite useful • Not very useful • Not at all useful • Don't know	**QUESTION DROPPED**	New and legacy
AW5	Which source of information on renewable heating systems was most useful?	List responses selected at *AW1*	**QUESTION DROPPED**	New and legacy
AW3	How did you access the information on renewable heating systems from each of the following?	List responses selected at *AW1:* • Website • Weblink - e.g. You tube video • Book • Printed guidance • Leaflet • Newspaper or magazine article • Television or radio programme • Telephone • Face to face	**QUESTION DROPPED**	New and legacy

		• Attended a course/talk/lecture • Can't remember • Don't know		
AW6	Which of the following did you trust the most to provide information about the {technology type} you installed in your home	List responses selected at *AW1*	List amended options from *AW1*	New and legacy
Intro3	We now have a few questions about the types of renewable heating technologies you have installed in your home and how you made the decision the install your {technology type}			New and legacy
HS1	In addition to your {technology type}, do you have any other renewable technologies installed in your home? We are interested in all renewable technologies you have in your home, not just those used for heating.	• No other renewable technologies installed in my home • Air source heat pump • Ground source heat pump • Water source heat pump • Biomass only boiler • Biomass pellet stove with back boiler • Biomass stove, e.g. log or wood burner • Solar thermal panels (flat plate or evacuated tube) • Solar Photovoltaic (PV) • Solar Photovoltaic Thermal Hybrid (PVT) • Thermodynamic solar panels (delivering heat 24/7 using heat pump technology) • Wind turbine system • Deep geothermal power • Hydro electricity system • Micro-Combined Heat and Power (CHP) • Connection to low carbon district heating system	**AMENDED ANSWER OPTIONS:** • No other renewable technologies installed in my home • Air source heat pump • Biomass boiler • Wood or log burner • Solar thermal panels (flat plate or evacuated tube) • Solar Photovoltaic (PV) • Other	New and legacy

		• Mechanical ventilation heat recovery (MVHR) • Other		
HS10	Which other renewable technologies do you have installed in your home?	Open text response	**QUESTION DROPPED**	New and legacy
HS2	Do you have a registered Metering and Monitoring Service Package?	• Yes • No	**QUESTION DROPPED**	New and legacy
CO2	Why did you select a {technology type} over other types of renewable heating technology?	• I did not consider any other types of renewable heating technologies Technical reasons • Technically better suited to my home • Lower noise levels • Installation was less disruptive • It integrated with my existing heating system • It was designed to work with my existing heating system • Planning permission • Reliability Financial reasons • I thought my fuel bills would be lower • Renewable Heat Incentive (RHI) tariff levels • It was eligible for the Renewable Heat Incentive (RHI) • Affordability of fuel needed to run the system • Cost of technology/initial outlay was lower Attitudinal reasons	**QUESTION DROPPED**	New and legacy

		• Recommendation from friend/family/neighbour • Recommendation from installer • Recommendation from Green Deal Assessment • Confidence in installers of this particular technology type • Preferred the overall appearance • Other • Don't know		
CO10	For which other reason(s) did you select {technology type} over other types of renewable heating technology?	Open text response	**QUESTION DROPPED**	New and legacy
HWT1	Before you installed your {technology type} did you use a single heating system to heat both your home and hot water?	• Yes - I had a single heating system which heated rooms and provided hot water • No - I had separate systems for heating rooms and for hot water for taps and showers • Don't know • Not applicable - Self build property or no heating system previously in place	**QUESTION DROPPED**	New and legacy
HS3	What was the main heating system prior to the {technology type} installation?	• Central heating - Biomass boiler • Central heating - Air source heat pump • Central heating - Ground source heat pump • Central heating - Water source heat pump • Central heating - Electric boiler • Central heating - Gas (mains)	**AMENDED QUESTION WORDING:** What were the main heating systems used to heat your water, your home or both, prior to	New and legacy

	• Central heating - Oil • Central heating - LPG/Other bottle gas • Central heating - Solid fuel • Communal or district heating • No heating system previously in place • Other • Don't know	installing {technology type}? **AMENDED ANSWER OPTIONS:** **Home or water or both** • Central heating - Oil • Central heating - Gas (mains) • Central heating - LPG/Other bottle gas • Central heating - Electric boiler **Home only** • Fixed room heaters - electric (including storage or Economy 7) • Fixed room heaters - solid fuel (open fire/enclosed oven) **Water only** • Electric water heater - heats water centrally for distribution to taps (e.g. immersion heater)

				• Electric boiler • Oil boiler • Solar thermal hot water system (flat plate or evacuated tube panels) • Gas boiler (mains) **Other** • Other • No heating system previously in place • Don't know	
HS3a	What was the main heating source prior to the {technology type} installation?	Open text response		No change	New and legacy
HS3i	Have you retained your {previous heating system}?	• Yes • No		**AMENDED ANSWER OPTIONS:** • Both space and water heating • Space heating only • Water heating only • No	New and legacy

HS3ii	Why have you retained your {previous heating system}?	• My new {technology} is designed to supplement the hot water provision of my previous system • My new {technology} is designed to supplement the space heating provision of my previous system • My new {technology} is designed to supplement the space heating and hot water provision of my previous system • It was easier to keep in • My installer suggested I should • I was worried about the reliability of the {technology type} • I didn't think my {technology type} would meet all my heating and/or hot water needs • I plan to switch back to the old system in the future • Other	**QUESTION DROPPED**	New and legacy
HS3iii	For what other reason(s) have you retained your {previous heating system}?	Open text response	**QUESTION DROPPED**	New and legacy
HS4	Overall how satisfied were you with your {previous heating system}?	• Very satisfied • Fairly satisfied • Neither satisfied not dissatisfied • Fairly dissatisfied • Very dissatisfied • Don't know	**QUESTION DROPPED**	New and legacy
HWT3	What was the main heating system you used to heat your home prior to the installation of your {technology	• Central heating - Biomass boiler • Central heating - Air source heat pump • Central heating - Ground source heat	**QUESTION DROPPED**	New and legacy

	type}?	pump • Central heating - Water source heat pump • Central heating - Electric boiler • Central heating - Gas (mains) • Central heating - Oil • Central heating - LPG/Other bottle gas • Central heating - Solid fuel • Mechanical ventilation with heat recovery (MVHR) • Fixed room heaters - electric (including storage or Economy 7) • Fixed room heaters - oil • Fixed room heaters - LPG/Bottled gas • Fixed room heaters - solid fuel (open fire/enclosed oven) • Portable heaters - electric • Portable heaters - bottled gas • Communal or district heating • No heating system previously in place • Other • Don't know		
HWT3i	What was the main heating system you used to heat your home prior to the installation of your {technology type}?	Open text response	**QUESTION DROPPED**	New and legacy
HWT4	Have you retained your {previous home heating system}?	• Yes • No	**QUESTION DROPPED**	New and legacy
HWT5	Why have you retained your	• My {technology type} provides hot water. It does not replace my previous space	**QUESTION DROPPED**	New and

	{previous home heating system}?	heating system. • My {technology type} is integrated with my previous heating system • It was easier to keep in • My installer suggested I should • I was worried about the reliability of the {technology type} • I didn't think my {technology type} would meet all my heating and/or hot water needs • I plan to switch back to the old system in the future • Other		legacy
HWT6	For what other reasons have you retained your {previous home heating system} heating system?	Open text response	**QUESTION DROPPED**	New and legacy
HWT7	Overall how satisfied were you with your {previous home heating system}?	• Very satisfied • Fairly satisfied • Neither satisfied not dissatisfied • Fairly dissatisfied • Very dissatisfied • Don't know	**QUESTION DROPPED**	New and legacy
HWT2	What was the main heating system you used to heat your hot water prior to the installation of your {technology type}?	• Biomass boiler • Air source heat pump • Ground source heat pump • Water source heat pump • Electric boiler • Gas boiler (mains) • Oil boiler • LPG/Other bottle gas • Solid fuel	**QUESTION DROPPED**	New and legacy

		• Solar thermal hot water system (flat plate or evacuated tube panels) • Communal or district heating • Gas water heater - heats water centrally for distribution to taps • Oil water heater - heats water centrally for distribution to taps • Electric water heater - heats water centrally for distribution to taps (e.g. immersion heater) • Solid fuel stove with water jacket • Point -of-use gas water heater sometimes called a "gas geyser" • Point-of-use electric water heater (e.g. electric shower) • No heating system previously in place • Other		
HWT2i	What was the main heating system used to heat your water prior to the installation of your {technology type}?	Open text response	**QUESTION DROPPED**	New and legacy
HWT9	Have you retained your {previous hot water heating system}?	• Yes • No	**QUESTION DROPPED**	New and legacy
HWT9i	Why have you retained your {previous hot water heating system}?	• My {technology type} is integrated with my previous hot water system • My {technology type} provides space heating only. It does not replace my previous hot water system. - remove • It was easier to keep in • My installer suggested I should	**QUESTION DROPPED**	New and legacy

		• I was worried about the reliability of the {technology type} • I didn't think my {technology type} would meet all my hot water needs • I plan to switch back to the old system in the future • Other		
HWT7	Overall how satisfied were you with the {previous hot water heating system} you previously used for hot water in your home?	• Very satisfied • Fairly satisfied • Neither satisfied not dissatisfied • Fairly dissatisfied • Very dissatisfied • Don't know	**QUESTION DROPPED**	New and legacy
MO1	Why did you decide to install a renewable heating system rather than a conventional heating system?	**Attitudinal reasons** • I like the technology • It complements my lifestyle and beliefs • Recommended by a friend/family member/neighbour • Recommended by a professional (e.g. plumber, architect or engineer) • I've seen renewable heating technology in operation and know that it works • Friends/family/neighbours have renewable heating technology installed **Technical reasons** • Complements another renewable heating	*Question follows MO3 in waves 10 - 12*	New and legacy

technology installed in my home

• Complements an existing conventional heating technology installed in my home

• Planning consent requirement

• Provides a more constant temperature

• Easier to use/control

• Easier access to fuel

Self-sufficiency reasons

• Able to generate my own energy

• Be more self-sufficient

• Reduce my dependence on fossil fuels

• As a more reliable energy source

Environmental reasons

• It helps the environment

• Reduce my carbon emissions

Financial reasons

• It's more efficient

• In anticipation of/to claim the Renewable Heat Incentive

• Save money

• Rising prices of fossil fuels (e.g. gas/oil)

		• Could get funding/grant • Don't know		
MO2	What was the main reason you decided to install a {technology type} rather than a conventional heating system in your home?	List all responses selected at *MO1*	*Question follows MO1 in waves 10 - 12*	New and legacy
MO3	You've already told us about your reasons for installing a renewable heating system rather than a conventional heating system. Did any of the following prompt your decision to install a new heating system?	• Building a home • Moving into a new home • Upgrading/refurbishing a home • Could get grant or funding • Needed to replace heating system • Green Deal Assessment • Other • None of the above	*Question follows HS5 in waves 10 - 12* **AMENDED QUESTION WORDING:** Did any of the following prompt your decision to install a new heating system at the time you did? **AMENDED ANSWER OPTIONS:** • Building a home • Moving into a new home • Upgrading/refurbishing a home • Grant or funding	New and legacy

			became available at that time • Needed to replace heating system • Green Deal Assessment • Other • None of the above	
MO3a	What other reason(s) prompted your decision to install a new heating system?	Open text response	**QUESTION DROPPED**	New and legacy
HS5	Did you change your previous heating system for any of the following reasons?	**Broken down/near end of its life** • It had broken down • It had not broken down yet, but it needed repairs too often • I was told that it would not last much longer and was better to replace before it broke down • I was told that the parts I needed would no longer be available in the future • It was no longer under warranty **Cost** • Servicing/repairing the system was very expensive • I had very high heating bills using my previous system • Took advantage of a financial incentive for replacing it e.g. Renewable Heat Premium Payment (RHPP) • Price of fuel **Not working properly** • It was no longer producing as much heat	**AMENDED ANSWER OPTIONS:** **Near end of its life/broken down** • It needed repairs too often • I was told that it would not last much longer and was better to replace before it broke down • It was no longer under warranty • It had broken down **Cost** • Servicing/repairing the system was very expensive • I had very high heating	New and legacy

as it used to / heating the home adequately
• I was concerned that it was no longer safe to run

Ineffective

• It did not heat home / hot water quickly enough
• I knew I could heat my home/ hot water more cheaply

Difficult to use

• It was difficult to control the timing of the heating
• It was difficult to control the temperature of the heating in different rooms

Other

• It was too noisy when it was operating
• It took up too much space
• I did not like the look of it / not in keeping with the style of my home
• It was not environmentally friendly enough
• As part of a wider renovation to my property
• To integrate with an existing heating/hot water system
• Other reason
• None of these
• Don't know / Can't remember

bills using my previous system
• Took advantage of a financial incentive for replacing it e.g. Renewable Heat Premium Payment (RHPP)
• Price of fuel

Not working properly

• It was no longer producing as much heat as it used to / heating the home adequately
• I was concerned that it was no longer safe to run

Ineffective

• It did not heat home / hot water quickly enough
• I knew I could heat my home/ hot water more cheaply

Difficult to use

• It was difficult to control the timing of the heating
• It was difficult to control the temperature of the heating in different rooms

Other

• It was too noisy when it was operating
• It was not environmentally friendly

			enough • As part of a wider renovation to my property • To integrate with an existing heating/hot water system • Other reason • None of these • Don't know / Can't remember	
HS5i	For what other reason(s) did you replace your previous heating system?	Open text response	**QUESTION DROPPED**	
Intro4	We'd now like to ask you a few questions about your experience of installing your {technology type} and how you funded its purchase and installation			New and legacy
BA2	Did you face any of the following difficulties in the overall process of installing the {technology type} in your home? By overall process we mean all steps from deciding which RHT to install, right through to the installation process itself	• I did not face any difficulties in the overall process of installing my {technology type} **Information difficulties** • Lack of information or advice • Unclear information or advice • Not clear who to go to for advice • Unsure which technology to choose **Financial difficulties** • Insufficient savings • Difficulties accessing a loan	**AMENDED ANSWER OPTIONS:** • I did not face any difficulties in the overall process of installing my {technology type} **Information difficulties** • Lack of information or advice • Unclear information or	New and legacy

• Finance package not available

Technical difficulties

• Difficult to integrate renewable heat technology with existing heating system

• House or garden technically unsuited to renewable heating technology installation

• Disruption caused by installation

• Lack of assessors to undertake the Green Deal Assessment

• Required survey or engineer report before installation of the system

Supply chain difficulties

• Didn't know how to find out who was accredited to install the system

• Identifying or finding an installer

• Identifying or finding a Green Deal Assessor

• Lack of local installers

• Lack of trusted installers

• Lack of local sources of biomass

Social or attitudinal difficulties

• Objections from family and friends

• Objections from neighbour

advice

• Not clear who to go to for advice

• Unsure which technology to choose

Financial difficulties

• Difficulties accessing a loan

• Finance package not available

Technical difficulties

• Difficult to integrate renewable heat technology with existing heating system

• Disruption caused by installation

• Lack of assessors to undertake the Green Deal Assessment

• Required survey or engineer report before installation of the system

Supply chain difficulties

• Identifying or finding an installer

		• Planning permission required • Lack of competent installers (lack of tech knowledge, caused damage etc.) • Other	• Lack of local installers • Lack of trusted installers **Social or attitudinal difficulties** • Objections from family and friends • Other	
BA2i	What other difficulties did you face in the overall process of installing your {technology type}?	Open text response	**QUESTION DROPPED**	New and legacy
Intro5	The following questions are about your confidence in the {technology type} you have installed		No longer required – not included in waves 10-12	New
CO1	Thinking about the {technology type} you have installed, how confident are you that it will: 1) Provide enough heat 2) Maintain a reasonable temperature 3) Be reliable 4) Be affordable to run and maintain 5) Provide financial savings (excluding the RHI) 6) Provide financial savings (including the RHI)	• Very confident • Fairly confident • Not very confident • Not at all confident • Don't know	**QUESTION DROPPED**	New
CO3	Thinking about the {technology	• Very confident	**QUESTION DROPPED**	New

	type} you have installed, how confident are you that it will: 1) Heat water to the desired temperature 2) Maintain a reasonable temperature 3) Provide sufficient hot water 4) Be reliable 5) Be affordable to run and maintain 6) Provide financial savings (excluding the RHI) 7) Provide financial savings (including the RHI)	• Fairly confident • Not very confident • Not at all confident • Don't know		
CO6	Do you expect your total energy bills to change as a result of installing your {technology type}?	• Expect total energy bill to increase • Expect total energy bill to stay the same • Expect total energy bill to decrease • Don't know	**QUESTION DROPPED**	New
ELE1	Which of the following electricity tariffs are you using?	• Standard • Economy 7 • Economy 10 • Don't know	No change	New and legacy
Intro6	The next few questions are about the fuel you use in your biomass boiler and how you purchase this			New and legacy
CO4i	Which fuels do you use in your biomass heating system?	• Pellets • Chips • Logs • Other	No change	New and legacy

CO4a	Which other types of fuel do you use in your biomass heating system?	Open text response	No change	New and legacy
CO4ii	Which statement best describes how you obtain your biomass fuel?	• I purchase all my biomass fuel • I am a registered self-supplier and supply enough fuel to meet my needs • I am a registered self-supplier but also purchase biomass fuel to meet my needs	No change	New and legacy
CO5	Are you happy with the availability of sustainable biomass fuel in your area?	• Yes • No • Don't know	No change	New and legacy
BMC	On average, how frequently do you purchase your biomass fuel?	For each type of fuel selected for biomass heating system at *CO4i*: • Less than once per year • Once per year • Once a quarter • Every couple of months • Once per month • More than once per month • Too early to say • Don't know	No change	New and legacy
BMC2	In which unit type do you purchase your biomass fuel?	For each type of fuel selected for biomass heating system at *CO4i*: • 10 kg Bag	No change	New and legacy

		• 15 kg Bag • 1/4 Pallet (c250 kg of Pellet) • 1/2 Pallet (c500 kg of Pellet) • 3/4 Pallet (c750 kg of Pellet) • Full Pallet (c1000 kg of Pellet) • Kilo • Tonne • Metre cubed • Other • Don't know		
BMC2i	Which other unit do you purchase your biomass fuel in?	Open text response	No change	New and legacy
BMC3	Approximately how much do you pay per unit (£)?	List each type of fuel selected for biomass heating system at *CO4i* and each unit selected at *BMC2*: Numerical response or Don't know	No change	
Intro7	We now have some questions about how you found out about the Renewable Heat Incentive (RHI) scheme			New and legacy
AR1	How did you find out about the Renewable Heat Incentive (RHI) scheme?	**Government, charity or advisory organisation** • National government including DECC (e.g. guidance published on a government website) • Ofgem	**AMENDED ANSWER OPTIONS:** **Government, charity or advisory organisation**	New and legacy

	• Your council/local authority • A charity or not for profit organisation • Energy Saving Trust • The Energy Saving Advice Line (ESAS) or Home Energy Scotland **Heating industry or professional** • A tradesperson or professional (e.g. builder, plumber or architect) • Heating system manufacturer • An energy supplier • Green deal assessor/advisor or Energy Advisor • An installer of renewable heating systems • Trade show **Friends/neighbours** • Friends/Family • A neighbour **Retailer** • Supermarket/Department Store/DIY Store **Media/website** • Television or radio programme • Newspaper or magazine article • Website • None of the above • Other	• National government including DECC (e.g. guidance published on a government website) • Ofgem • Energy Saving Trust • The Energy Saving Advice Line (ESAS) or Home Energy Scotland **Heating industry or professional** • A tradesperson or professional (e.g. builder, plumber or architect) • Heating system manufacturer • Green deal assessor/advisor or Energy Advisor • An installer of renewable heating systems • Trade show **Friends/neighbours** • Friends/family or neighbour • Newspaper or magazine article • Website • None of the above • Other

AR1i	In which other ways did you find out about the Renewable Heat Incentive (RHI) scheme?	Open text response	**QUESTION DROPPED**	New and legacy
AR2	Overall, how would you rate the usefulness of information on the Renewable Heat Incentive (RHI) provided by each of the following?	For each answer option selected at *AR1*: • Very useful • Quite useful • Not very useful • Not at all useful • Don't know	No change	New and legacy
AR3	Did you face any of the following difficulties in meeting the requirements of the Renewable Heat Incentive (RHI) scheme?	• No difficulties in being able to meet the requirements • Lack of information on the Green Deal • Unable to find a Green Deal Assessor • Cost of Green Deal assessment • Was not clear if my system was eligible for the RHI scheme • Lack of information on RHI scheme requirements • RHI application process unclear • Finding an installer for the required energy efficiency measures • Funding the required energy efficiency measures • Finding an accredited installer • Unaware of requirement to use an Microgeneration Certification Scheme (MCS) accredited installer • Finding information about metering energy efficiency	**AMENDED ANSWER OPTIONS:** • No difficulties in being able to meet the requirements • Lack of information on the Green Deal • Unable to find a Green Deal Assessor • Cost of Green Deal assessment • Was not clear if my system was eligible for the RHI scheme • Lack of information on RHI scheme requirements • RHI application process	New and legacy

		• Other	unclear • Finding an installer for the required energy efficiency measures • Funding the required energy efficiency measures • Finding an accredited installer • Unaware of requirement to use an Microgeneration Certification Scheme (MCS) accredited installer • Finding information about metering energy efficiency • Other	
AR3i	What other difficulties did you face in make an application for the Renewable Heat Incentive (RHI)?	Open text response	**QUESTION DROPPED**	New and legacy
Intro8	The next questions ask for more detail about how you financed your {technology type} and the impact of the RHI scheme on your decision about which renewable heating technology to install			New and legacy
FI1	How did you fund the installation of your {technology type}?	**Savings:** • Savings **Loan/mortgage:** • Personal loan • Finance agreement (where a third party funds all/part of the installation in return for	**AMENDED ANSWER OPTIONS:** **Savings:** • Savings	New and legacy

		all/part of the RHI payment) • Manufacturer finance agreement • Installer finance agreement • Other finance agreement • Mortgage or remortgage • Green deal finance **Grant or Government funding** • Scottish or Welsh Government Scheme • Renewable Heat Premium Payment (RHPP) scheme • Local authority scheme **Other sources:** • Pension • No upfront cost • Other • Would prefer not to say	**Loan/mortgage:** • Personal loan • Finance agreement (where a third party funds all/part of the installation in return for all/part of the RHI payment) • Manufacturer finance agreement • Installer finance agreement • Other finance agreement • Mortgage or remortgage • Green deal finance **Grant or Government funding** • Scottish or Welsh Government Scheme • Renewable Heat Premium Payment (RHPP) scheme • Local authority scheme **Other sources:** • Pension • No upfront cost • Other • Would prefer not to say	
FI32	In which other way did you fund the installation of your {technology type}?	Open text response	**QUESTION DROPPED**	New and legacy

FI5	Are you aware that the Renewable Heat Incentive (RHI) tariff may reduce (degress) in the future? Degression will only apply to new entrants. Please note that the tariff already agreed as part of your RHI application will not decrease	• Yes • No • Don't know	No change	New and legacy
FI6	Did the possible reduction in the Renewable Heat Incentive (RHI) tariff payable, encourage you to install your {technology type} more quickly	• Yes • No • Don't know	No change	New and legacy
IM1	Without the Renewable Heat Incentive (RHI), would you have installed a new heating system?	• Yes • No • Don't know	No change	New
IM4	Without the Renewable Heat Incentive (RHI), would you have chosen to install a different technology to the {technology type}?	• Yes • No • Don't know	No change	New
IM5	Which heating technology type would you have chosen instead?	• Gas boiler • Oil boiler • Electric heating • Biomass boiler or stove • Ground or water source heat pump • Solar thermal • Air source heat pump	No change	New

		• Deep geothermal power • Micro-Combined Heat and Power (CHP) • Mechanical ventilation heat recovery (MVHR) • Other		
IM5i	Which other heating technology would you have chosen instead?	Open text response	**QUESTION DROPPED**	New
IM2	Has the Renewable Heat Incentive (RHI) scheme made it easier for you to secure finance to install your {technology type}?	• Yes • No • Don't know • Not Applicable	No change	New
IM3	To what extent was your decision to install a {technology type} influenced by the specific Renewable Heat Incentive (RHI) tariff payable for this technology?	• A great deal • A little • Not at all • Don't know	**AMENDED QUESTION WORDING:** To what extent did the tariffs payable under RHI influence your choice of renewable heating technology?	New
Intro9	In this section we'd like to find out about the different steps that led up to your application to the Renewable Heat Incentive scheme		No longer required – not included in waves 10-12	New and legacy
IN1	Here is a list of possible steps that might have led up to your Renewable Heat Incentive (RHI)	• Heard about the Renewable Heat Incentive (RHI) • Heard about the benefits of renewable heating technologies	**QUESTION DROPPED**	New and legacy

	application.	• Heard about the Renewable Heat Premium Payment (RHPP) scheme • Applied for planning permission • Agreed the specification and installation with an installer • Had an Energy Performance Certificate carried out on my home • Replaced/installed heat distribution system, e.g. radiators or under floor heating • Had a Green Deal assessment carried out on my home • Decided which renewable heating technology to install • Discussed renewable heating technologies with green deal provider • Needed to replace the existing heating system • Researched the available renewable heating technologies • Requested a quote from a renewable heating installer • Secured finance • Installed system • Applied to the Renewable Heat Incentive (RHI) scheme		
IN2	Which order did these steps take place?	List all responses selected at previous question	**QUESTION DROPPED**	New and legacy
Intro10	The next few questions ask about any additional measures or works that you undertook at the same time as the installation of your {technology type}			New and legacy

IN3	Did your decision to apply to the Renewable Heat Incentive (RHI) scheme prompt you to install (or plan to install) any of the following other energy efficiency or renewable energy measures? We are only interested in the measures that you have installed or plan to install as a direct result of applying to the RHI scheme (not the RHPP scheme)	**Insulation** • Cavity wall insulation • Loft insulation • Solid wall insulation • Floor insulation • Draught proofing • Efficient glazing **Energy efficient equipment** • Efficient lighting • Efficient appliances **Heat pumps** • Air source heat pump • Ground source heat pump • Water source heat pump **Solar heating** • Solar thermal panels (flat plate or evacuated tube) • Solar PV • Solar Photovoltaic Thermal Hybrid (PVT) • Thermodynamic solar panels (delivering heat 24/7 using heat pump technology) **Biomass** • Biomass only boiler • Biomass pellet stove with back boiler **Other heating system** • Boiler • Mechanical Ventilation with Heat Recovery (MVHR) • New under floor heating system • Connection to low carbon district heating system	**AMENDED QUESTION WORDING:** Did your decision to apply to the Renewable Heat Incentive (RHI) scheme prompt you to install (or plan to install) any of the following other energy efficiency or home improvement measures? We are only interested in the measures that you have installed or plan to install as a direct result of applying to the RHI scheme (not the RHPP scheme) **AMENDED ANSWER OPTIONS:** **Insulation** • Cavity wall insulation • Loft insulation • Solid wall insulation • Floor insulation • Draught proofing • Efficient glazing **Energy efficient**	New and legacy

Microgeneration
• Wind turbine system
• Hydro electricity system
• Micro-Combined Heat and Power (CHP)
Better metering or control
• Smarter Heating Controls
• Smart meter –actual meter
• Smart meter – monitor
Radiators/other parts
• Hot water cylinder
• Housing for Ground Source or Water Source Heat Pump
• New radiators
• Pipe work
• Flue
Other
• Remedial groundworks (e.g. landscaping)
• Other renovation work (e.g. extension)
• Fuel store (for biomass only)
• Other
• None of the above

equipment
• Efficient lighting
• Efficient appliances
Better metering or control
• Smarter Heating Controls
• Smart meter –actual meter
• Smart meter – monitor
Radiators/other parts
• Hot water cylinder
• Housing for Ground Source or Water Source Heat Pump
• New radiators
• Pipe work
• Flue
Other

• Remedial groundworks (e.g. landscaping)
• Other renovation work (e.g. extension)
• Fuel store (for biomass only)

• Other

• None of the above

IN3a	Did you use any of the following sources of finance to fund your additional energy efficiency or renewable energy measures?	For each answer option selected at *IN3*: • Feed in Tariffs (FITs) • Energy Company Obligation (ECO) • Green Deal cashback • Green Deal communities • Scottish or Welsh Government Grants • Green Deal finance **/** Home Improvement Fund • Renewable Heat Incentive • Did not use any of these sources of finance • Other • Don't know	**AMENDED ANSWER OPTIONS:** • Feed in Tariffs (FITs) • Energy Company Obligation (ECO) • Green Deal cashback • Green Deal communities • Scottish or Welsh Government Grants • Green Deal finance **/** Home Improvement Fund • Other • Did not use any of these sources of finance • Don't know	New and legacy
IN3i	Please can you tell us when you installed (or plan to install) each of the energy efficiency or renewable energy measures?	For each answer option selected at *IN3*: • Before the installation of {technology type} • During the installation of {technology type} • Planning to install within 12 months • Planning to install in 12+ months • Don't know	No change	New and legacy
IN8intro	We now have some more questions about how you selected an installer for your {technology type}.			New and legacy

IN8	How easy was the installation process for your {technology type}? Installation refers to the process of fitting the new renewable heat technology in your home	• Very easy • Fairly easy • Fairly difficult • Very difficult • Don't know	No change	New and legacy
IN6	How did you identify an installer for your {technology type}?	• I am an installer of renewable heating technologies • Via a Green Deal Assessor • Micro generation certification (MCS) website • Word of mouth/recommendation • Used them before • General web search • Trade show • Visited a showroom • Website(s) that you put you in direct contact with installers • Advert/leaflet • Other	No change	New and legacy
IN6i	In which other way did you find an installer for your {technology type}?	Open text response	**QUESTION DROPPED**	New and legacy
IN7	How easy or difficult was it for you to find an installer whom you believed would fit your {technology type} correctly?	• Very easy • Fairly easy • Fairly difficult • Very difficult • Don't know	No change	New and legacy

IN9	Did you receive any of these services from the installer of your {technology type}? Please do not include any services received from your Green Deal Assessor or Advisor	• Energy saving advice • Advice on renewable heating technologies • Installation of energy saving measures • Provided finance or helped access finance • Warranty • Maintenance package • Monitoring and metering package • Green Deal assessment • Demonstration of how to use my {technology type) • Demonstration of how to take meter readings • Help with making my Renewable Heat Incentive application • Help with making an application for grant funding for my renewable heating installation • None of the above	No change	New and legacy
Intro25	The following questions are about the costs of purchasing and installing your {technology type}, as well as any other work you may have undertaken at the same time			New and legacy
IN14	What was the cost of your {technology type} including VAT (rounded to the nearest £)? This is just the cost of the	Numerical response or Don't know	No change	New and legacy

	equipment and should not include the installation or labour costs			
IN15	What was the cost of installing your {technology type} including VAT (rounded to the nearest £)? This is the cost of labour to install and should not include the cost of equipment itself	Numerical response or Don't know	No change	New and legacy
IN12	Earlier in the questionnaire you told us that you had some additional works carried out at the same time you had your {technology type} installed. For each measure please can you tell us the total cost including VAT (rounded to the nearest £)? If necessary please estimate the labour cost. Please only include contracted or commissioned works which you have paid for	For each answer option selected at *IN3*: Numerical response or Don't know	No change	New and legacy
IN13	What was the total cost of all additional works carried out at the same time of your {technology type} installation (rounded to the nearest £)?	Numerical response or Don't know	No change	New and legacy

	This is the cost of all other works carried out at the same time as your {technology type}. Please include VAT			
IN13i	What was the total cost of all works related to the installation of your {technology type} (rounded to the nearest £)? This should include the cost of equipment, installation and all other works carried out at the same time you installed your {technology type}	Numerical response or Don't know	No change	New and legacy
Intro 11	The following questions are about the process of applying for the Renewable Heat Incentive scheme itself			New and legacy
AP1	Please rate your overall satisfaction with the ease of applying for the Renewable Heat Incentive (RHI)?	• Very satisfied • Fairly satisfied • Neither satisfied nor dissatisfied • Fairly dissatisfied • Very dissatisfied	No change	New and legacy
AP2	How easy or difficult did you find it to complete the Renewable Heat Incentive (RHI) application form?	• Very easy • Fairly easy • Fairly difficult	No change	New and legacy

		• Very difficult • Don't know		
APP1	Did you have any problems completing the Renewable Heat Incentive (RHI) application?	• Yes • No • Don't know	No change	New and legacy
APP2	What problems did you have in completing the Renewable Heat Incentive application?	• The application questions were not appropriate for my installation • It was not clear what information I needed to provide • Official guidance on the Renewable Heat Incentive was overly complex • I found it difficult to supply all the information required about my installation • I had technical problems, such as uploading supporting information • The application form was returned by Ofgem • The application took too long to complete • The review process took too long • Information provided by the Ofgem telephone helpline was unclear or not helpful • My application was initially rejected • Other	No change	New and legacy
APP3	What other problems did you have in completing the Renewable Heat Incentive (RHI) application?	Open text response	**QUESTION DROPPED**	New and legacy
AP5	When you completed your	• Yes	**QUESTION DROPPED**	New and

	Renewable Heat Incentive (RHI) application was it accepted immediately?	• No		legacy
AP6	Approximately how many days did it take for your application to be accepted once it went to manual review?	Numerical response or Don't know	**QUESTION DROPPED**	New and legacy
AP4	Approximately how many weeks did it take from your decision to commission a Green Deal Assessment to the assessment itself taking place?	Numerical response or Don't know	**QUESTION DROPPED**	New and legacy
AP4i	Approximately how many weeks did it take for you to receive the Green Deal report after the Green Deal assessment had taken place?	Numerical response or Don't know or 'Still awaiting report'	**QUESTION DROPPED**	New and legacy
AP4ii	Approximately how many weeks after your Green Deal Assessment did you submit the Renewable Heat Incentive (RHI) application?	Numerical response or Don't know	**QUESTION DROPPED**	New and legacy
SA1	How satisfied are you with the process for receiving the Renewable Heat Incentive (RHI) payment?	• Very satisfied • Fairly satisfied • Neither satisfied nor dissatisfied • Fairly dissatisfied • Very dissatisfied	No change	New and legacy

		• Have not experienced this yet		
Intro 12	The next few questions ask about your satisfaction with your {technology type}			New and legacy
BA1	Overall, from choosing your {technology type} to having it installed in your home, how easy or difficult did you find the process?	• Very easy • Fairly easy • Fairly difficult • Very difficult • Don't know	**QUESTION DROPPED**	New and legacy
SAT1	How satisfied overall are you with your {technology type}?	• Very satisfied • Fairly satisfied • Neither satisfied nor dissatisfied • Fairly dissatisfied • Very dissatisfied • Too early to say • Don't know	No change	New and legacy
SAT2	How does this compare to your expectations? Is your {technology type}	• Much better • A little better • Neither better nor worse • A little worse • Much worse • Too early to say • Don’t know	**QUESTION DROPPED**	New and legacy
EB5	How satisfied are you with these different aspects of your {technology type} 1) Noise level	• Very satisfied • Fairly satisfied • Neither satisfied nor dissatisfied • Fairly dissatisfied • Very dissatisfied	No change	New and legacy

	2) How it looks 3) How reliable it is 4) Understanding the system controls 5) Ease of adjusting controls	• Too early to say • Don't know		
EB6	How satisfied are you with the comfort delivered by your {technology type} in the following seasons? 1) Spring 2) Summer 3) Autumn 4) Winter	• Very satisfied • Fairly satisfied • Neither satisfied nor dissatisfied • Fairly dissatisfied • Very dissatisfied • Too early to say (remove have not experienced yet) • Do not use in this season • Don't know	**QUESTION DROPPED**	Legacy
EB7	Which of the following describes the temperature achieved by your {technology type} during.. 1) the coldest days 2) the coldest nights 3) overall	• Much too hot • Too hot • About right • Too cold • Much too cold • Too early to say • Don't know	**AMENDED ANSWER OPTIONS:** • Much too hot • Too hot • About right • Too cold • Much too cold • Have not experienced this yet • Don't know	Legacy
EB1	Thinking about your overall bills for energy (your total for electricity, gas and other fuels) have you noticed a change since your {technology type} has been installed?	• My total household fuel bill has increased • My total household fuel bills have decreased • No change / my total household fuel bills have stayed the same	No change	Legacy

	By total bill we mean the cost for all types of energy used in the home including electricity, gas, biomass. Exclude Renewable Heat Incentive payments from your estimate	• Too early to say • Don't know		
EB11	Would you recommend installing a {technology type} to a friend or family member?	• Yes, definitely • Yes, probably • Not sure • No, probably not • No, definitely not • Too early to say	**QUESTION DROPPED**	New and legacy
Intro13	Finally, we have a few questions about your attitudes to energy savings and your home			
SE5	How much thought, if any, would you say you give to energy saving in your home?	• A lot of thought • Some thought • Very little thought • No thought at all • Don't know	**QUESTION DROPPED**	New and legacy
SE6	Do you actively monitor how you use energy in your home?	• Yes • No	**QUESTION DROPPED**	New and legacy
S7	To what extent you agree or disagree with the following statements:	• Strongly agree • Agree • Disagree • Strongly disagree • Don't' know	**QUESTION DROPPED**	New and legacy

	- I consider the way I use heating - I consider the way I use hot water - I am careful to switch off lights and electrical appliances			
BK4	How long have you lived at your home?	• Not moved into it yet • Less than one year • 1-2 years • 3-4 years • 5-10 years • 11-15 years • 16-20 years • 21 years or more	No change	New and legacy
BK5	Roughly how long do you think you and your household will continue to own and occupy your home?	• Currently moving • Up to one year • 1-2 years • 3-4 years • 5-10 years • 11-15 years • 16-20 years • 21 years or more	No change	New and legacy
HH1	What is your household's total income before tax and any other deductions? This includes earnings from employment or self-employment, income from benefits and pensions,	• up to £5,199 • £5,200 to £10,399 • £10,400 to £15,599 • £15,600 to £20,799 • £20,800 to £25,999 • £26,000 to £31,199 • £31,200 to £36,399 • £36,400 to £41,599	No change	New and legacy

	as well as income from other sources such as interest from savings	• £41,600 to £46,799 • £46,800 to £51,999 • £52,000 to £77,999 • £78,000 to £103,999 • £104,000 to £129,999 • £130,000 or over • Prefer not to say		
HH2	How many people of each age live in your house?	Numerical response for each of the following age bands: • 0-4 • 5-10 • 11-15 • 16-24 • 25-34 • 35-44 • 45-54 • 55-64 • 65-74 • 75 or over	**AMENDED QUESTION WORDING:** Do people of the following age groups live in your house? **AMENDED ANSWER OPTIONS:** • 0-15 • 16-34 • 35-54 • 55-74 • 75 and over	New and legacy
HH3	How many people live in your household?	• 1 • 2 • 3 • 4 • 5	Question added in wave 10	New and legacy

- 6 or more

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