



Department
of Energy &
Climate Change

Evaluation of the Renewable Heat Incentive (RHI)

Technical report of survey of Non-Domestic RHI
applicants (wave 2)

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Introduction

This technical report describes the approach taken to the second wave of the Non-Domestic Renewable Heat Incentive (RHI¹) applicants' survey, targeting applicants that submitted applications to Ofgem between 8 January and 31 December 2015. The first wave of the survey was conducted in March 2014 with applicants that had applied between the start of the scheme in November 2011 and 7 January 2014. The results of the first wave have been reported on separately.² The findings of the second wave of this 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 (DECC) and undertaken by NatGen 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 chain³; and
- Domestic RHI applicants and Registered Social Landlords (RSLs) participating and not participating in the RHI scheme.

This technical report focuses entirely on the Non-Domestic RHI scheme. The aim of this strand of the research was to understand the administration, delivery and performance of the Non-Domestic RHI and explore its effect on the renewable heat supply chain. The outputs from the evaluation will help DECC to understand and assess how the Domestic RHI is delivering relative to its objectives and to support the development of the scheme. This evaluation will also help ensure that DECC is conforming to the principles of accountability, transparency and openness to scrutiny in policy-making.

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

- First wave and second wave of a survey of applicants to the Non-Domestic RHI;
- Qualitative research with possible applicants to the Non-Domestic RHI;
- Survey of organisations across Britain (wider awareness survey); and

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 See <https://www.gov.uk/government/publications/evaluation-of-the-renewable-heat-incentive-interim-report-the-non-domestic-scheme>

³ The renewable heat supply chain includes manufacturers, sellers and installers of renewable heating technologies and suppliers of biomass fuel

- Qualitative research with multiple applicants to the Non-Domestic RHI

This technical report focuses specifically on the methodology of the second wave of the survey of applicants to the Non-Domestic RHI. The evaluation consortium contributed to this project in the following ways:

- NatCen Social Research, with extensive experience of conducting policy evaluations, led the consortium and provided a main point of contact for DECC. They took overall responsibility for project management, research design, fieldwork, and analysis and reporting of research findings.
- Eunomia Research and Consulting, specialists in strategic and policy-related work around complex technologies in the energy sector, led on this Non-Domestic strand.
- Peak Answers, specialist providers in telephone data collection services conducted the fieldwork. This included the programming of and conducting of telephone interviews and day to day fieldwork management.

RHI Non-Domestic applicant survey

Background and aims

Across the two waves, the survey of Non-Domestic applicants aimed to improve understanding of:

- applicants' motivations behind the decision to install renewable heat technologies;
- barriers to applying to the RHI scheme and installing renewable heat technologies; and
- applicants' experiences of installing renewable heat technologies, applying to the RHI, meeting on-going scheme requirements, and using their new heating system.

The aim of wave 2, in particular, was to:

- provide an understanding of any changes to the characteristics and experiences of the Non-Domestic applicant pool, between those who first applied between November 2011 and early January 2014 and those who first applied between early January 2014 and 31st December 2014, by repeating questions asked in wave 1 of the survey; and
- improve understanding of the applicant base by asking additional questions about particular aspects of the applicant experience.

Sample design

The sample for the second wave of the Non-Domestic applicant survey was designed to:

- provide representative data on *applicants* for questions relating to applicants and their organisations;
- provide representative data on *applications* to the RHI for questions relating to applications and installations; and
- provide representative data (where possible) on applications for each of the main technologies currently accredited in the scheme.

Sampling applications

The sample frame was based on a dataset of full⁴ and preliminary⁵ applications provided by Ofgem. However preliminary applications were not included in the sample frame, as applicants for these would have been unable to respond to the majority of survey questions. All withdrawn, excluded or rejected applications were included to ensure the views of all applicants, regardless of whether their applications resulted in accreditation to the scheme, were represented in the research.

In addition, a number of applicants have made several applications to the scheme; these are known as 'multiple applicants' (see Figure 1). In order to exclude the possibility of approaching

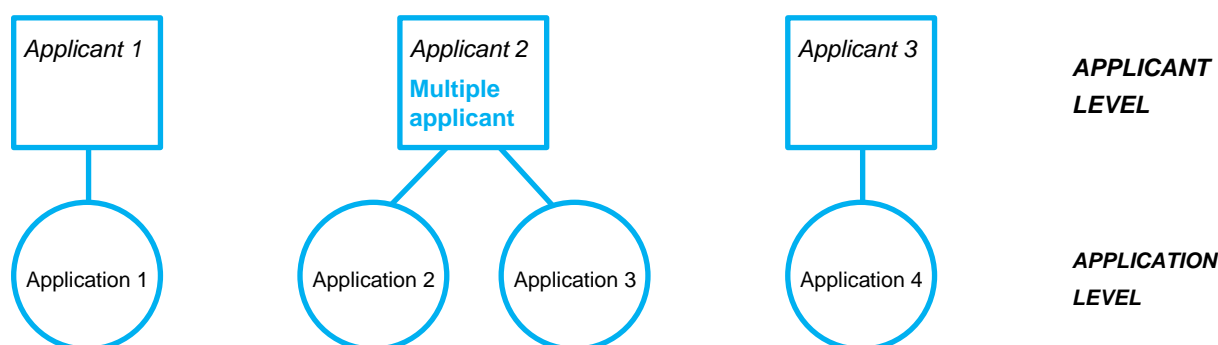
⁴ A completed application submitted to Ofgem for a system which has been installed and commissioned by the time the application is made.

⁵ A completed (though less detailed) application submitted to Ofgem for a system which has not yet been commissioned.

any applicant more than once within or across the two survey waves, the sampling frame was restricted to:

- applications from applicants that first applied to the scheme after the conduct of the first wave, i.e. applicants that submitted their first application on or after 8 January; and
- one randomly selected application per multiple applicant.

Figure 1: Applicant and application levels



The RHI application data does not include applicant-level identifiers. Therefore, in order to determine which of the applications were from ‘multiple applicants’, we matched applicants to each other using the domain part of their email address (after the ‘@’), their full email address and their telephone number, in this order. This methodology did not identify all multiple applicants due to the many business models used by multiple applicants, but did identify and correctly collate the majority of their application portfolios. However, we did not, to our knowledge, contact any applicant more than once.

Sample frame

The full Ofgem dataset contained 11,624 applications from 8,001 applicants, submitted between November 2011 and 31 December 2014. Of these, 4,147 applications came from applicants that submitted applications before 8 January 2014. These were included in the wave 1 sample frame. 1,247 applications submitted on or after 8 January 2014 were from applicants that had previously submitted applications—these applicants were therefore excluded from wave 2. Finally, 6,230 applications were submitted by applicants who submitted their first application on or after 8 January 2014, and were thus eligible for wave 2. This is set out in Table 1, with further detail of the applicants’ journeys, including those from wave 1 and those new to the scheme since wave 1, provided in Figure 2.

Table 1: Type of applicant and timing of application

Applicants submitted application...	Number of applications	Number of applicants	Inclusion in survey
...before 8 January 2014	4,147	3,086	Included in wave 1
...on or after 8 January 2014, but had previously submitted an application	1,247	(434) ⁶	Excluded from wave 2
...on or after 8 January 2014, only	6,230	4,915	Included in wave 2
TOTAL	11,624	8,001	

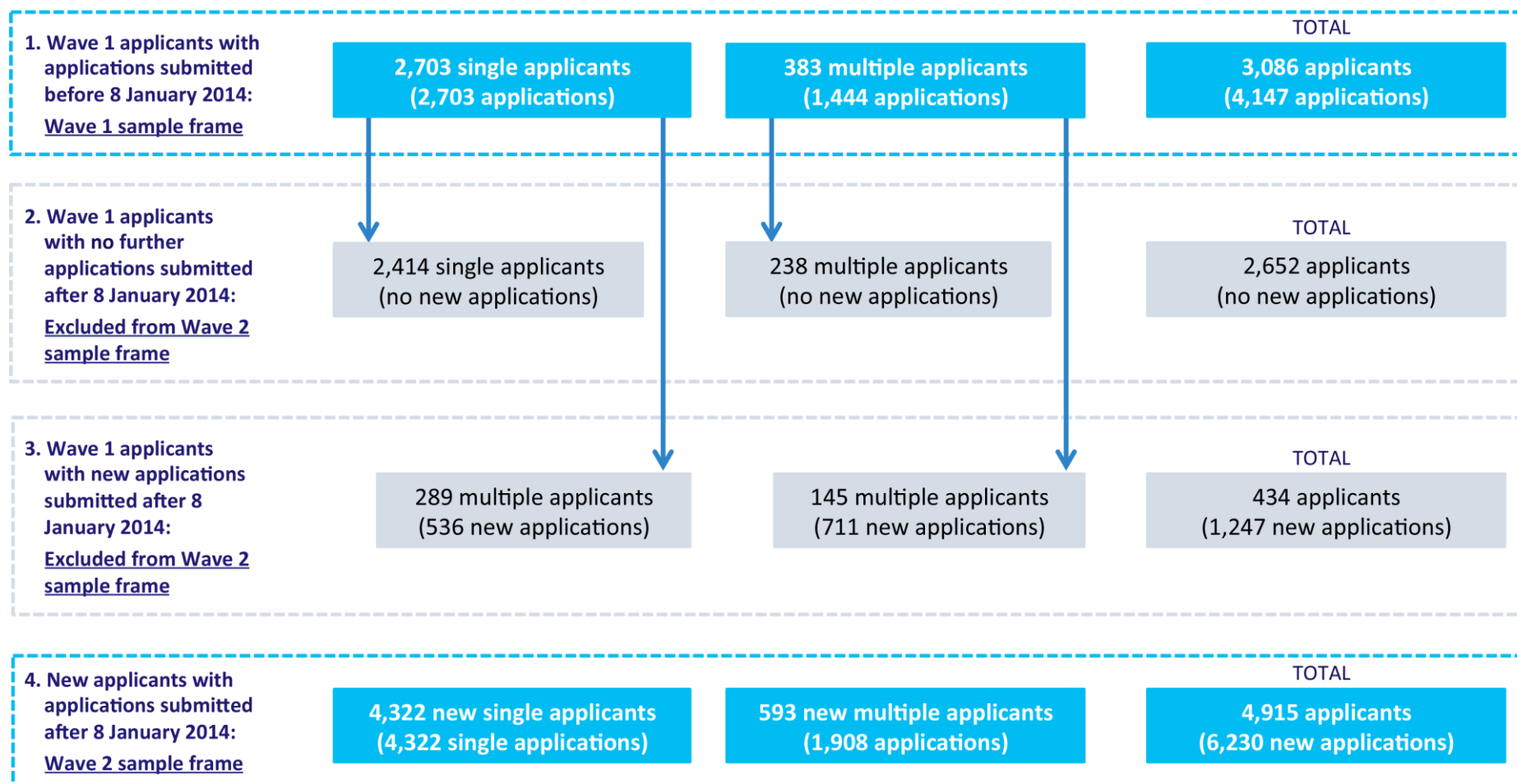
Of the 6,230 applications in the sample frame, 6,016 (97%) were for biomass boilers, 102 (1.5%) for ground source heat pumps and the remainder (1.5%) for other technologies. A summary of technology types of the applications and applicants is shown in Table 2. 'Multiple single-tech applicants' are those who have submitted multiple applications for the same technology type. The table shows that of the 593 multiple applicants, 552 are single-technology multiple applicants.

Table 2: Technology types of applications in the wave 2 sample frame

Technology type	Total number of applications	Number of single applicants	Number of multiple single-tech applications	Number of multiple single-tech applicants
Solid biomass boiler	6,017	4,184	1,792	543
Ground source heat pump (GSHP)	102	76	9	4
Solar thermal	62	28	4	2
Water source heat pump (WSHP)	4	4	0	0
Air source heat pump (ASHP)	15	8	3	1
Biogas	15	10	3	1
Bio-methane	15	12	2	1
TOTAL	6,230	4,322	1,813	552

⁶ These applicants are counted twice (and hence shown in brackets): once in the first row of the table, for their pre-8 January application(s), and again in the second row because of their post-8 January application.

Figure 2: Applicant journeys from wave 1 and composition of the wave 2 sample frame



Sampling strategy

The fieldwork aimed to achieve 500 completed interviews. This was expected to provide enough responses to achieve statistically significant results in a number of key applicant sub-groups, without resulting in an unnecessarily high cost for the survey. Assuming a response rate of 30%⁷, a sample of 1,667 applications was therefore drawn.

In order to select the sample, a single application was selected at random from each multiple applicant in the sample frame (see Table 3).

Table 3: Number of applications from multiple applicants selected at random

Technology	Number of applications among multiple applicants in sample frame	Number of applications selected at random for survey
Solid biomass boiler	1,833	108
Ground source heat pump (GSHP)	26	4
Solar thermal	34	4
Water source heat pump (WSHP)	0	0
Air source heat pump (ASHP)	7	0
Biogas	5	0
Bio-methane	3	0
Total	1,908	116

Two groups were oversampled by including all relevant applications in the sample (i.e. running a census on those groups) in order to improve our ability to detect differences between the views of oversampled applicants and others. The two groups were applications relating to ground source heat pumps and applications submitted by single-applicant public sector organisations. These groups were selected because understanding their experiences would help to inform the RHI policy and a census would allow sufficient numbers for subgroup analysis. Unlike in wave 1 of the survey, rejected, excluded or withdrawn applications were not oversampled.

From those applications not included through a census, an equal-probability random sample was drawn. The sample was stratified to ensure that it was representative of the population with respect to the variables that were considered most important in influencing views and experiences of renewable heat technologies and the RHI. The sampling approach also aimed to

⁷ The response rate achieved for wave 1 was 36%. However, our experience in other RHI surveys had shown that early RHI applicants were more likely to participate in research than later applicants. As a result, we used the more conservative assumption of a 30% response rate.

ensure that there were a reasonable number of applications in each individual stratum. The stratification variables were:

- Type of technology applied for;
- Application status (receiving RHI support; currently applying; application rejected, withdrawn or excluded);
- Applicant sector (industrial, commercial and leisure, agricultural);
- Former Government Office (GO) Region;
- Whether on/off the natural gas grid; and
- Whether an applicant submitted one, two or three or more applications.

Fieldwork

Fieldwork for wave 2 was conducted between 23 February 2015 and 6 March 2015.

As the survey was largely a repetition of wave 1, during which only a few problems were reported with the questionnaire, no pilot was carried out for wave 2. Although some new questions were added to the survey, the format and content of the questions was similar to those used in wave 1.

Fieldwork procedures

Prior to the start of fieldwork, interviewers were verbally briefed by Peak Answers about the survey background and questionnaire, and were provided with briefing documents produced by NatCen and Eunomia. These provided further background information on the survey, the questionnaire, the sample, making contact with respondents and the fieldwork timetable. Interviewers then went through the survey in test mode several times prior to interviewing, and any questions were dealt with by supervisors on an ad-hoc basis.

Advance letters outlining the background and objectives of the survey, as well as information about the interview, confidentiality and how the findings would be used were sent to potential respondents 3 days prior to the start of fieldwork. No incentives were offered.

Fieldwork for the main stage of the survey took place from 23 February 2015 to 6 March 2015. Computer-assisted telephone interviews were conducted by a team of 9 interviewers at Peak Answers. The interview was programmed using Nebu and no additional materials were used by way of an aid to interviewing.

The interviews were conducted with the appropriate person responsible for decision-making regarding the application for the RHI. As the sample was drawn from the register held by Ofgem, we assumed that the contact names and details would be for the individual within the organisation who was responsible for the application. However, we anticipated that it would also be necessary to identify the key decision maker within the organisation as this may not necessarily be the named applicant.

Quality assurance

Peak Answers carried out fieldwork quality assurance procedures to ensure that interviewers adhered to the questionnaire script and that responses were correctly coded. These procedures are set out below:

- A minimum of 5% of the interviews were monitored by a supervisor. This involved the supervisor listening live to the interview as well as to a selection of the interviewers' attempts to recruit respondents.

- A report was compiled for each interviewer based on the monitoring of their work, with feedback to the interviewer as relevant. The monitoring was spread across the interviewers to reflect the proportion of interviews each has completed.
- Open questions were reviewed by the interviewer at the end of the survey, once the respondent was off the line and before the data was submitted to the system.
- Upon completion of fieldwork (and sometimes during it), the open responses were reviewed by the project manager with basic spelling and punctuation errors corrected.
- Closed question data was checked against the questionnaire and the CATI specification to ensure that all questions had been answered and that, for example, multi/single coded questions had been entered correctly.

Confidentiality

All potential respondents received an advance letter outlining that survey participation was voluntary and that any information they 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 was 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.

The questionnaire

The survey consisted of up to 92 questions, depending on routing, and took on average 25 minutes to complete.

The survey covered the following topic areas:

- The applicant organisation's characteristics, heating requirements and application status
- Decision making processes of customers in installing their renewable heat technology
- Applicants' experiences of the RHI scheme
- Procuring and installing renewable heat technologies
- Experience of operating renewable heat technologies
- Performance of renewable heat technologies
- Pre and post installation experiences
- Satisfaction with the RHI application process and renewable heat technologies.

Response rates

The survey was stopped when 501 interviews were achieved, resulting in a response rate of 30%⁸. The breakdown of responses can be seen in the tables below.

⁸ Stopping the survey after fulfilling the sample quota may have increased risk of bias by a very small amount. This is because respondents with particular views and experiences may have been less able to take part in the survey

Table 4: Overall fieldwork response

	N	% of total	% of eligible
Issued	1667	100	
Ineligible ⁹	7	0	
Eligible	1660	100	100
- Productive	501	30	30
- Non-contact	497	30	30
- Refusal	97	6	6
- Other unproductive	565	34	34

Table 5: Fieldwork response by key characteristics

	Number in issued sample	Number in achieved sample	Response rate %
Technology type			
Ground Source Heat Pump	82	37	45
Solar Thermal	19	4	21
Solid Biomass Boiler	1552	453	29
Other ¹⁰	14	7	50
Application status			
Receiving RHI	723	208	29

during the fieldwork period. However, the risk of bias from non-response affecting any random-selection survey is likely to be greater.

⁹ Ineligible cases included: those where the applicant told us that they were only part way through their application; some where they had applied in relation to a domestic property; and cases that were identified as duplicates within the sample.

¹⁰ The other category combines: bio-methane, biogas, energy from waste, air source heat pumps and water source heat pumps because the total number of applications was too small to provide a response figure for these technologies separately.

Applying for RHI (or in review)	940	293	31
Application failed (withdrawn/ rejected/ cancelled/ excluded)	4	0	0
Industry sector			
Agriculture	452	145	32
Industrial	156	45	29
Commercial & Leisure	827	249	30
Public	232	62	27
Government Office Region			
East	116	30	26
East Midlands	102	31	30
London	8	1	13
North East	71	22	31
North West	164	55	34
Scotland	314	87	28
South East	117	41	35
South West	250	78	31
Wales	213	67	31
West Midlands	136	38	28
Yorkshire and the Humber	176	51	29
On/off gas grid			
Off gas	1198	375	31
On gas	469	126	27
Total	1667	501	30

Weighting

Weighting is used to ensure that the responses achieved through the survey are representative in regards to key characteristics of the population from which the sample is drawn. The non-applicant survey had questions relating to the applicant, for example whether they were aware of tariff degression, and questions relating to the specific heating installation, for example whether degression influenced the timing of the installation. In order to analyse these questions correctly, two weighting strategies were used. The first calculated weights to reflect the population of *applicants*, the second to reflect the population of *applications*.

The majority of questions were weighted to the population of applications. This is the approach that had been taken in the analysis of wave 1, and thus maintains comparability between waves.

The following questions were weighted to the population of applicants:

- How many renewable heat technology installations have you or your organisations applied for the RHI for in total?
- Are you currently planning to apply for the RHI for any other renewable heat technology installations?
- What is your level of responsibility?
- What is your area of work, your department or functional role?
- Which of the following describes your organisation?
- How many employees does your organisation have?
- Does your RHI technology contribute to you meeting your obligations to any of the following schemes?
- Do you claim a Feed in Tariff?
- Are you aware of tariff degression?
- Thinking about all your installations and applications to the RHI, has tariff degression influenced any of the following?
- Do you think the risk of future tariff degenerations will impact these aspects of your future installations and applications?
- Have you had any of your RHI applications returned to you by Ofgem?
- Thinking about all your applications to the RHI, do you feel the RHI application process is...(improving/worsening)
- Are you aware of the forthcoming sustainability criteria your fuel will need to meet to continue to be eligible for RHI payments?
- What action have you taken? [*in relation to the sustainability criteria*]

Application-level weighting

Selection weights

The employed sampling approach means that the probability of selection differed across applications, depending on whether an application was made by:

- an organisation with multiple applications

- a single-applicant organisation that did not form part of the census
- a single-applicant organisation that did form part of the census.

The first stage of the weighting process, therefore, applied selection weights to the achieved sample to correct for unequal selection probabilities. Without selection weights, estimates will be skewed towards groups that are over-sampled.

In order to calculate the selection weights, the achieved sample was split into four groups:

- applications from organisations with single applications (in census)
- applications from organisations with single applications (not in census)
- applications from organisations with two applications
- applications from organisations with three or more applications.

The weights were then calculated separately for each group. The first group was sampled with certainty; therefore the selection weight was equal to one. For the second and third groups the weights were equal to the ratio of the number of applications in the population to the number of applications in the issued sample. For the final group (applications from organisations with three or more applications) the selection weight was equal to the total number of applications made by the organisation but capped at three (therefore all the weights for this group were equal to three) thus avoiding extreme/outlying weights.

Calibration weights

The second stage of the weighting process adjusted the selection weights using calibration weighting, so that the weighted sample of applications matched the population on key characteristics.

Calibration weighting cannot overcome bias arising from factors that are not measured in both the population and the achieved sample. As the response rate for this survey was 30%, non-response bias could be 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 was due to the technology installed by an applicant and the number of full-time employees, the calibration weight would overcome the bias from the former factor, as technology type is included as calibration weight (see below). However, the bias related to employees could not be adjusted for, because there is no employee measure available for both population and sample participating in the survey.

Furthermore, every survey that uses random sampling will, by chance, differ from the population from which the sample is drawn, even if no non-response bias exists. Other things being equal, differences between population and sample are larger for small samples than for large samples. The uncertainty about the representativeness of the survey is expressed in confidence intervals around the estimated measures.

The following variables were used in the calibration:

- type of technology applied for (in two categories: Solid biomass vs. Other technologies) interlocked with Application status;
- applicant sector;
- former Government Office Region; and

- whether on or off the natural gas grid.

The final weight ensures the achieved sample matches the population as closely as possible and minimises the risk of bias due to differential non-response. Nonetheless, differences in response rates have been minimal and, apart for the difference between biomass and ground source heat pump respondents, are not statistically significant at the 95% confidence level.

Applicant-level weighting

The applicant-level weighting followed the same approach of calculating selection and calibration weights.

Selection weights

Selection weights were calculated considering the differential selection probabilities of:

- organisations that made multiple applications;
- single-applicant organisation that did not form part of the census; and
- single-applicant organisation that did form part of the census.

To calculate the weights, the achieved sample was split into:

- i. applicant organisations in subpopulations of which a census was carried out
- ii. applicant organisations in subpopulations of which a census was not carried out.

Calibration weights

To calculate calibration weights, the following variables were used:

- type of technology applied for (in two categories: Solid biomass vs. Other technologies) interlocked with Application status;
- applicant sector;
- former government office region; and
- whether on or off the natural gas grid.

Table 6 shows the weighted and unweighted distribution of key characteristics.

Table 6: Weighted and unweighted sample distribution by key characteristics

	Population % ¹¹	Achieved sample % (unweighted)	Achieved sample % (application weight) ¹²
Technology type			
Ground Source Heat Pump	2	8	2
Solar Thermal	1	1	0
Solid Biomass Boiler	97	90	97
Other ¹³	1	1	1
Application status			
Receiving RHI	55	58	56
Applying for RHI (or in review)	44	42	44
Application failed (withdrawn/ rejected/ cancelled/ excluded)	0	-	-
Industry sector			
Agriculture	33	29	33
Industrial	10	9	10
Commercial & Leisure	51	50	51
Public	5	12	5
Government Office Region			

¹¹ A number of duplicate applications were identified subsequent to sampling; these were removed from the population, hence the proportions in the first column above do not match exactly the population figures in Table 5.

¹² Figures for applicant-level weights are not reported, because for each category at least some applicants fell into more than one category.

¹³ The other category combines: bio-methane, biogas, and water source heat pumps.

East	8	6	8
East Midlands	8	6	8
London	0	0	0
North East	4	4	4
North West	10	11	10
Scotland	19	17	19
South East	6	8	6
South West	14	16	14
Wales	12	13	12
West Midlands	8	8	8
Yorkshire and the Humber	10	10	10
On/off gas grid			
Off gas	76	75	76
On gas	24	25	24
Total	100.0	100.0	100.0

Analysis

Coding and data editing

The survey included a number of questions that allowed the submission of a free text “Other” option. These answers were reviewed by Eunomia researchers and where the text was similar to one of the existing question options, the free text response was coded back to the appropriate answer category. Responses that did not align with existing answer categories were coded as “Other.” No other data editing took place.

Significance Testing

Differences between sub-groups are reported where significance tests carried out in SPSS 18.0 found the differences to be statistically significant at the 95% or above confidence level. This is to ensure that we can be confident that any differences in responses are reflective of differences in the population rather than being an effect of sampling.

Comparisons to wave 1

One of the aims of the second wave was to provide comparisons between the earlier groups of applicants and the later groups. This was only possible for questions which weighted to the application level and was in most cases straightforward.

However, even at the application level, where the timing of the installation of the heating technology is more relevant than the timing of the application, comparisons could not be carried out. Around 12% of the installations for which applications have been submitted since January 2014 have actually been commissioned prior to 2014. Some of these have been commissioned as far back as 2009. This means that comparing between waves on questions on the installation process, decision-making leading to the installation of the RHT and even the operation of the RHT may be misleading.

Annex 1: Questionnaire

1. How many RHT installations have you or your organisations applied for the RHI for in total?

[numeric input]

- Don't know

2. Are you currently planning to apply for the RHI for any other RHT installations?

- Yes
- No
- Don't know

3. What is your level of responsibility?

- Owner
- Executive/Senior Management
- Middle Management/Line Management/Supervisory
- Individual Contributor/Non-Management

[IF NOT 'OWNER' PROCEED TO QUESTION 4]

4. What is your area of work, your department or functional role?

- Accounting or Finance
- Administration or Management
- Operations, including estates, logistics and engineering
- Other: [text input]

[IF NOT BIO-METHANE]

5. What is your role in respect of the RHI and the RHT you have installed?

- ... RHI applicant
- ... Owner of the RHT installation
- ... Recipient of the heat produced by the RHT
- ... Operator of the RHT installation
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[IF NOT 'RECIPIENT OF THE HEAT PRODUCED BY THE RHT', PROCEED TO QUESTION 7]

[BIO-METHANE ONLY]

6. What is your role in respect of the RHI and the RHT you have installed?

- ... RHI applicant
- ... Owner of the RHT installation
- ... Operator of the RHT installation
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

7. How many employees does the heat recipient's organisation have?

- Fewer than 10
- 10 - 49
- 50 - 249
- More than 250
- (SPONTANEOUS ONLY) Don't know

[ACCOMODATION SECTOR ONLY]

8. Which of the following describes your organisation?

- Hotel
- Holiday centre
- Holiday cottage or other self-catering accommodation
- Bed & Breakfast
- Farm
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[ACCOMODATION SECTOR ONLY]

9. What is the main use of the building the RHT provides heat to?

- Tourism
- Hospitality
- Residential
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

10. How many employees does your organisation have?

- Fewer than 10
- 10 - 49
- 50 - 249
- More than 250
- (SPONTANEOUS ONLY) Don't know

11. Does your RHT contribute to you meeting your obligations to any of the following schemes?

- Climate Change Agreements
- The CRC Energy Efficiency Scheme, formerly the Carbon Reduction Commitment
- The EU Emissions Trading Scheme
- The Climate Change Levy
- The Renewables Obligation
- Greenhouse Gas (GHG) Reporting
- None of the above
- (SPONTANEOUS ONLY) Don't know

12. Do you claim a Feed in Tariff?

- Yes
- No
- Don't know
- Prefer not to say

13. Is it correct that your installation is a [TEXT FILL: TECH TYPE]?

- Yes
- No

[IF NO, PROCEED TO QUESTION 14]

14. What technology did you install?

- Biomass boiler
- Solar thermal
- Energy from Waste
- Ground source heat pump
- Water source heat pump
- Air source heat pump
- Biomethane injection
- Biogas plant

[IF NOT BIO-METHANE, BIOGAS OR ENERGY FROM WASTE]

15. Is the entire building your RHT is providing heat to newly built?

- Yes
- No
- Don't know

[IF NO OR DON'T KNOW, PROCEED TO QUESTION 16 & 17]

<p>16. Did the use of this building change immediately prior to or as a result of installing the RHT?</p> <ul style="list-style-type: none">• Yes• No• Don't know
<p>17. Did any part of the building your RHT is providing heat to have a heating system prior to the installation of your RHT?</p> <ul style="list-style-type: none">• Yes• No• Don't know <p>[IF YES, PROCEED TO QUESTION 18, 20 & 21]</p>
<p>18. Was the RHT installed as a replacement of the previous heating system?</p> <ul style="list-style-type: none">• Yes• No• Don't know <p>[IF YES, PROCEED TO ANSWER QUESTION 19 & 20]</p>
<p>19. How does the capacity of the RHT compare to the capacity of the old system?</p> <ul style="list-style-type: none">• The capacity of the RHT is larger• The capacity of the RHT is smaller• The capacity of the RHT is the same• Don't know
<p>20. What type of system was the old system?</p> <ul style="list-style-type: none">• Gas boiler• Oil boiler• Electric heating• Direct combustion of fossil fuels• Biomass boiler• Other: [text input]• (SPONTANEOUS ONLY) Don't know
<p>21. How many years old was the old system?</p> <p>[numeric input]</p> <ul style="list-style-type: none">• Don't know

[IF NOT BIO-METHANE]

22. What is the current status of your application?

- It is currently approved
- It was initially approved, but has now been rejected
- It was initially approved, but is now being reviewed again by Ofgem
- It is being reviewed by Ofgem
- It is with us (IF NECESSARY: 'With us' means that the application has been returned to the applicant for amendments and/or corrections, prior to being approved.)
- It has been rejected
- It has been withdrawn
- (SPONTANEOUS ONLY) Don't know

[BIO-METHANE ONLY]

23. What is the current status of your application?

- It is currently approved
- It was initially approved, but has now been rejected
- It was initially approved, but is now being reviewed again by Ofgem
- It is being reviewed by Ofgem
- It is with us (IF NECESSARY: 'With us' means that the application has been returned to the applicant for amendments and/or corrections, prior to being approved.)
- It has been rejected
- It has been withdrawn
- (SPONTANEOUS ONLY) Don't know

24. What was the lead time, in number of months, between the decision to install the RHT and the actual installation?

[numeric input]

- Don't know

25. Which of the following were factors in your decision to install a new renewable heating system?

- [PREV HEATING SYSTEM ONLY] Concerns about performance of previous system
- Technology of new system was better suited to heating requirements
- Financial case for new system (IF NECESSARY: This could include RHI payments)
- CSR or reputational reasons (IF NECESSARY: CSR stands for Corporate Social Responsibility)
- Regulatory requirements
- Other reasons: [text input]
- (SPONTANEOUS ONLY) Don't know

[IF MORE THAN ONE ANSWER SELECTED, PROCEED TO QUESTION 26]

[IF 'CONCERNS ABOUT PERFORMANCE OF PREVIOUS SYSTEM, PROCEED TO QUESTION 27]

[IF REGULATORY REQUIREMENTS, PROCEED TO QUESTION 28]

26. Which one of these factors was most important?

- [LIST ANSWERS SELECTED IN QUESTION 25]
- (SPONTANEOUS ONLY) Don't know

27. Which of the following were you concerned about in relation to your previous system?

- It broke down and was beyond repair
- It was unreliable
- It didn't produce enough heat
- It was not responsive enough or did not allow for flexible operation
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

28. What specific regulatory requirements were a factor?

FREE TEXT: [alpha-numeric]

- (SPONTANEOUS ONLY) Don't know

29. Were you concerned about any of the following before installing your system?

- The performance of the new system
- The upfront cost
- The running costs of the new system, including RHI payments
- Getting accredited to receive the RHI
- [BIOMASS AND ENERGY FROM WASTE ONLY] Stable supply of fuel
- [NOT BIO-METHANE, BIOGAS OR ENERGY FROM WASTE] Technical suitability for your property or heat demand
- Other: [text input]
- None
- (SPONTANEOUS ONLY) Don't know

[IF MORE THAN ONE ANSWER SELECTED, PROCEED TO QUESTION 30]

30. Which one of these was your main concern?

[LIST ANSWERS SELECTED IN QUESTION 29]

- (SPONTANEOUS ONLY) Don't know

31. Where did you obtain financing to install the RHT?

- Your own finances, including balance sheet
- Re-mortgaged property
- Grant
- External Private Equity
- Bank loan

- Asset Finance Package
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know
- (SPONTANEOUS ONLY) Prefer not to say

32. Which financing did you initially want to use?

- The same one(s) you used
- Your own finances, including balance sheet
- Grant
- External Private Equity
- Bank loan
- Asset Finance Package
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know
- (SPONTANEOUS ONLY) Prefer not to say

33. What is the anticipated pay-back period for your RHT?

[numeric input]

- Don't know
- Prefer not to say

34. Did you have to seek planning permission in order to install your RHT?

- Yes
- No
- Don't know

35. Without the RHI, what heating technology would you have installed?

- [PREV HEATING SYSTEM ONLY] I would not have installed any new heating system
- Other renewable heating technology
- Other non-renewable heating technology
- The same
- (SPONTANEOUS ONLY) Don't know

[IF 'OTHER RENEWABLE HEATING TECHNOLOGY' OR 'OTHER NON-RENEWABLE HEATING TECHNOLOGY', PROCEED TO QUESTION 36]

36. What technology type would you have chosen instead?

- Gas boiler
- Oil boiler
- Electric heating
- Biomass boiler
- Ground source heat pump
- LPG boiler
- Solar thermal
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[IF BIOMASS, GSHP, WSHP, BIOGAS]

37. Did the banding or tiering of tariffs affect your decision about the size of installation to install?

- Yes, the tiering affected our choice
- Yes, the banding affected our choice
- No, neither affected our choice
- (SPONTANEOUS ONLY) Don't know

[IF EITHER OF THE 'YES' RESPONSES, PROCEED TO QUESTION 38]

38. In what way did the banding and/or tiering affect the size of the installation? Did you...

- ... select a larger installation
- ... select a smaller installation
- ... select multiple smaller installations
- (SPONTANEOUS ONLY) Don't know

39. How has the size of your installation been optimised?

- To meet my current or expected heat demand
- To maximise RHI payments
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[IF MORE THAN ONE ANSWER SELECTED, PROCEED TO QUESTION 40]

40. Which one of these was most important?

- [LIST ANSWERS SELECTED IN QUESTION 39]
- (SPONTANEOUS ONLY) Don't know

41. Did you make the decision on the size of the installation on your own or after receiving advice?

- On our own
- After receiving advice from our installer
- After receiving advice from someone else
- (SPONTANEOUS ONLY) Don't know

42. Are you aware of tariff degression?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 43 AND 44]

[IF YES **AND** YES TO QUESTION 2, PROCEED TO QUESTION 45]

[SINGLE APPLICANTS ONLY]

43. Did tariff degression influence any of the following?

- The timing of the installation
- The timing of your application to the RHI
- Your choice of technology
- The size of your installation
- The operation of your RHT
- None of the above
- (SPONTANEOUS ONLY) Don't know

[MULTIPLE APPLICANTS ONLY]

44. Thinking about all your installations and applications to the RHI, has tariff degression influenced any of the following?

- The timing of the installation
- The timing of your application to the RHI
- Your choice of technology
- The size of your installation
- The operation of your RHT
- None of the above
- (SPONTANEOUS ONLY) Don't know

45. Do you think the risk of future tariff degressions will impact these aspects of your future installations and applications?

- The timing of the installation
- The timing of your application to the RHI
- Your choice of technology
- The size of your installation
- The operation of your RHT
- None of the above
- (SPONTANEOUS ONLY) Don't know

46. How easy was the process of installation?

- Very easy
- Fairly easy
- Neither easy nor difficult
- Fairly difficult
- Very difficult
- (SPONTANEOUS ONLY) Don't know

47. Did you encounter any of the following problems before installing your system?

- Getting suitable advice
- Finding a suitable installer
- Finding a building designer
- None of the above
- (SPONTANEOUS ONLY) Don't know

48. Did you encounter any of the following problems with the installation of your system itself?

- Getting the equipment commissioned
- Unexpected costs
- Delays in installation process
- Early performance issues
- Specific problems with the installer (IF NECESSARY: this might include mistakes made by the installer)
- Any other problems: [text input]
- (SPONTANEOUS ONLY) I had no problems with the installation process.
- (SPONTANEOUS ONLY) Don't know

49. Which of the following did you contact at any point during the design and installation of your RHT?

- The manufacturer
- An installer
- A building or heating services designer
- A public energy advisory service, such as ESAS, the Energy Saving Advice Service, or the Energy Saving Trust
- Any other professionals: [text input]
- (SPONTANEOUS ONLY) None of the above.
- (SPONTANEOUS ONLY) Don't know

[IF MORE THAN ONE ANSWER SELECTED, PROCEED TO QUESTION 50]

50. Which of these did you contact first?

- [LIST ANSWERS SELECTED IN QUESTION ABOVE]
- (SPONTANEOUS ONLY) Don't know

51. Where did you find your installer? Was it...

- ... through a web search or similar?
- ... at an event?
- ... a recommendation from someone else?
- ... from their advertising or a sales call?
- ... through the manufacturer?
- ... from previous experience with the installer?
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

52. Did you consider applying to the domestic RHI for the same installation?

- Yes
- No
- Not applicable, as my technology is not eligible for the domestic RHI
- Don't know

53. How many full time equivalent days did it take to complete the application for the RHI?

- 0-4 days
- 5-9 days
- 10-14 days
- 15 days or longer
- (SPONTANEOUS ONLY) Don't know

54. Did you have any problems completing the application?

- Yes
- No

- Don't know

[IF YES, PROCEED TO QUESTION 55]

55. What problems were these?

- Technical problems with the application form
- Difficulty supplying or identifying the requested information
- The application took too long to complete
- I struggled to get the advice I needed
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[MULTIPLE APPLICANTS ONLY]

56. Have you had any of your RHI applications returned to you by Ofgem?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 57]

[MULTIPLE APPLICANTS ONLY]

57. Was your application returned to you by Ofgem?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 59]

[SINGLE APPLICANTS ONLY]

58. Was your application returned to you by Ofgem?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 59]

59. Why was this application returned to you?

- Problems with meters or metering arrangements
- Problems with correct authorisation letters or verification of the company
- Problems with the type of premise (IF NECESSARY: whether it is domestic or not)
- Problems with details of the installation, such as heat use, emission certificate, description, capacity or commissioning date.
- Problems with heat loss assessments or an accurate schematic.
- Problems related to other heating plants or systems, including those replaced
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[ACCREDITED APPLICATIONS ONLY]

60. What is your overall impression of the requirement to collect meter readings regularly? Has it been...

- ... very easy?
- ... fairly easy?
- ... neither easy nor difficult?
- ... fairly difficult?
- ... very difficult?
- (SPONTANEOUS ONLY) Don't know

[ACCREDITED APPLICATIONS ONLY]

61. Have you had any problems collecting and submitting your meter data?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 62]

62. What problems were these?

- A small window available for taking readings
- A small window available for submitting readings
- The resource required to read the meter on time
- The capability required to read the meter on time
- A fault with the meter
- Ofgem challenged the submitted meter readings
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[IF 'A FAULT WITH THE METER', PROCEED TO QUESTION 63]

63. What fault or faults did your meter have?

- The meter was orientated incorrectly
- The temperature sensors were inverted
- The flow meter was installed in the wrong pipe
- A component of the meter broke down
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[MULTIPLE APPLICANTS ONLY]

64. Thinking about all your applications to the RHI, do you feel the RHI application process is...

- ... getting better
- ... getting worse
- ... not changing
- (SPONTANEOUS ONLY) Don't know

65. How satisfied are you overall with your RHT?

- Very satisfied
- Fairly satisfied
- Neither satisfied nor dissatisfied
- Fairly dissatisfied
- Very dissatisfied
- (SPONTANEOUS ONLY) Don't know, as the installation hasn't been operational for very long
- (SPONTANEOUS ONLY) Don't know

66. How satisfied are you with the ease of operation of your RHT?

- Very satisfied
- Fairly satisfied
- Neither satisfied nor dissatisfied
- Fairly dissatisfied
- Very dissatisfied
- (SPONTANEOUS ONLY) Don't know

67. How satisfied are you with the operating costs of your RHT?

- Very satisfied
- Fairly satisfied
- Neither satisfied nor dissatisfied
- Fairly dissatisfied
- Very dissatisfied
- (SPONTANEOUS ONLY) Don't know

[PREV HEATING SYSTEM ONLY]

68. Compared to your previous system, do you have the new system at, a higher temperature, a lower temperature or the same temperature?

- Higher temperature
- Lower temperature
- The same temperature
- Don't know

[PREV HEATING SYSTEM ONLY]

69. Compared to your previous system, do you use the new system for longer operating hours, shorter operating hours or the same operating hours?

- Longer operating hours
- Shorter operating hours
- The same operating hours
- Don't know

[GROUND SOURCE HEAT PUMP, AIR SOURCE HEAT PUMP, WATER SOURCE HEAT PUMP ONLY]

70. How are you deploying your heat? Is it through...

- Underfloor Heating
- Radiators
- Other: [text input]
- (SPONTANEOUS ONLY) Unsure

[NOT BIO-METHANE OR ENERGY FROM WASTE]

71. Does your RHT meets your heating needs...

- ... all the time?
- ... most of the time?
- ... some of the time?
- ... none of the time?
- (SPONTANEOUS ONLY) Don't know, as the installation hasn't been operational for very long
- (SPONTANEOUS ONLY) Don't know

[IF 'NOT ALL OF THE TIME', PROCEED TO QUESTION 72]

72. Why does it not meet your needs all of the time?

- It is not reliable
- It can't generate sufficient heat
- It is too expensive
- It is difficult to control
- It is not responsive enough
- Because of user input required (IF NECESSARY: such as adding fuel)
- Because of problems with the fuel or feedstock
- Any other reasons: [text input]
- (SPONTANEOUS ONLY) Don't know

[NOT BIO-METHANE, NOT ENERGY FROM WASTE, NOT BIOGAS]

73. Do you have an alternative or back-up heating system installed?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 74]

74. How often do you use your alternative system?

- Daily
- Weekly
- Monthly
- Seasonally
- Almost never
- (SPONTANEOUS ONLY) Don't know, as the installation hasn't been operational for very long
- (SPONTANEOUS ONLY) Don't know

[IF 'DAILY', 'WEEKLY' OR 'SEASONALLY', PROCEED TO QUESTION 75]

75. What is your alternative system used for? Do you use it...

- ... when the RHT is out of service
- ... when insufficient temperature is provided by the RHT
- ... to provide extra heat during extreme weather conditions
- [GSHP, WSHP AND ASHP ONLY]... when the cost of electricity to run the RHT is high
- [BIOMASS, BIOGAS, BIO-METHANE, ENERGY FROM WASTE ONLY]... when feedstocks are limited or run out
- [SOLAR THERMAL ONLY]... when there is limited sunshine (IF NECESSARY: In cloudy weather, at night, in winter)
- [BIOMASS BOILER, GSHP, WSHP ONLY]... when the tier 1 tariff is used up
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know, as the installation hasn't been operational for very long
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

76. Have you adjusted the operation of your biomass system to take account of the two tiers for the RHI payment?

- Yes
- No
- Don't know, as the installation hasn't been operational for very long
- Don't know

[IF YES, PROCEED TO QUESTION 77]

77. In what way have you adjusted it? Do you...

- ... only run the biomass plant when receiving the first tier payment (IF NECESSARY: that is, you always switch to an alternative heat supply when receiving the second tier payment)
- ... sometimes switch to an alternative heat supply when receiving the second tier payment
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

78. What is the length of warranty you have for your RHT?

- [numeric inputs - years and months]
- (SPONTANEOUS ONLY) No warranty
 - (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

79. First of all, in what form does the fuel enter your boiler?

- Pellets
- Chips
- Logs
- Off-cuts
- Sawdust
- Wood waste
- Arboricultural arisings (IF NECESSARY: This means residues from parks and gardens maintenance)
- Other [text input]
- (SPONTANEOUS ONLY) Don't know

[IF 'PELLETS', PROCEED TO QUESTION 83]

[BIOMASS ONLY]

80. How do you source your fuel? Do you...

- ... buy it?
- ... acquire it for free or produce it yourself?
- (SPONTANEOUS ONLY) Don't know

[IF 'BUY IT', PROCEED TO QUESTION 81 AND 87]

[IF 'ACQUIRE IT FOR FREE', PROCEED TO QUESTION 82]

[IF NOT 'ACQUIRE IT FOR FREE', PROCEED TO QUESTION 89]

[BIOMASS ONLY]

81. Where do you source your purchased fuel from? Is it from...

- ... a dedicated fuel broker or merchant?
- ... your boiler provider or a service company?
- ... a producer, such as a forestry manager or saw-mill?
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

82. Where do you source your free fuel from? Do you...

- ... produce it yourselves, such as from own forestry, woodlands or saw-mill?
- ... gather it yourselves, such as forestry residues?
- ... acquire it free from elsewhere, for example a saw-mill?
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

83. How does the fuel get delivered?

- By tanker
- In bags
- Baled
- Other: [text input]
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

84. Are you aware of the forthcoming sustainability criteria your fuel will need to meet to continue to be eligible for RHI payments?

- Yes, and I have already taken action to ensure my fuel meets them
- Yes, and I have plans in place to meet them
- Yes, but I am not yet sure what this means for my installation
- No, I am not aware of these criteria
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

[IF 'YES AND I HAVE ALREADY TAKEN ACTION TO ENSURE MY FUEL MEETS THEM' TO QUESTION 84 AND 'ACQUIRE IT FOR FREE' TO QUESTION 80]

85. What action have you taken for the fuel you supply yourself?

- Self-reported the sustainability of my fuel to Ofgem
- Registered as a self-supplier on the Biomass Sustainability List
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

[IF 'YES AND I HAVE PLANS IN PLACE TO MEET THEM' TO QUESTION 84 AND 'ACQUIRE IT FOR FREE' TO QUESTION 80]

86. What action do you plan to take for the fuel you supply yourself?

- Self-report the sustainability of my fuel to Ofgem
- Register as a self-supplier on the Biomass Sustainability List
- No longer self-supply
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

87. Do you have a supply contract?

- Yes
- No
- Don't know

[IF YES, PROCEED TO QUESTION 88]

[BIOMASS ONLY]

88. How long is this supply contract for?

- 0-1 month
- 2-6 months
- 7-11 months
- 1-2 years
- Longer than 2 years
- (SPONTANEOUS ONLY) Don't know

[BIOMASS ONLY]

89. How much do you pay for your biomass fuel per tonne, including transport? Please round your answer to the nearest 5 pounds.

FREE TEXT: [numeric]

- (SPONTANEOUS ONLY) Don't know

90. Would you recommend your RHT to others?

- Yes
- No
- Don't know

[NOT BIO-METHANE, NOT ENERGY FROM WASTE]

91. Have any energy efficiency improvements been made to the building or buildings which the RHT provides heat for?

- Yes
- No

- Don't know

[IF YES, PROCEED TO QUESTION 92 & 93]

[IF NO, PROCEED TO QUESTION 94]

92. What improvements did you make?

- Insulating walls
- Insulating floors or lofts
- Improving windows or doors (IF NECESSARY, includes double-glazing and secondary glazing)
- Changing appliances or lighting to more energy efficient models
- Installing heating controls
- Other: [free text]
- (SPONTANEOUS ONLY) Don't know

93. When were these improvements made?

- Before installing the RHT and applying for the RHI
- At the same time as installing the RHT
- After installing the RHT and before applying for the RHI
- After applying for the RHI
- (SPONTANEOUS ONLY) Don't know

94. Why have you not made energy efficiency improvements to the building?

- Inadequate access to finance
- It is not technically possible
- It is not necessary
- Other: [free text]
- (SPONTANEOUS ONLY) Don't know

95. Do you have any other comments on either RHTs or the RHI?

[open ended]

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