



# Survey of Non-Domestic RHI Applicants (Wave 2)

A research project commissioned as part of the Renewable Heat Incentive  
Evaluation

January 2016

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# HEADLINE MESSAGES

## Who are the RHI Applicants?

Non-domestic RHI applicants are **most likely to be from the commercial & leisure (57%) and agriculture (28%) sectors** and they **overwhelmingly work in small businesses with fewer than 10 employees (82% of applicants)**.

**Almost three-quarters (72%) of all installations are retrofitted**, and 87% of all applications are for small biomass boilers (less than 200 kWth). In particular, there is a high frequency of applications for biomass boilers between 190 and 199 kWth (24% of all small biomass).

**Around 42% of RHI applications are made by applicants who have made more than one application to the scheme.**

## What influences their decision-making?

Financial factors play a key role within the decision-making process. Wave 2 applicants are **motivated by financial reasons when deciding to install a renewable heating system** (for 58% it is the most important factor), and the **upfront costs were the principal concern prior to installing a new system** for 42% of applicants.

**Most applicants (61%) used their own finances or balance sheet to purchase their renewable heat installation.**

**Tiering and banding also had an impact on decision-making for size for 48% of owners of 190 to 199 kWth biomass boilers** and 9% of the rest of the RHI applicant population, suggesting that the design of the scheme is influencing some key applicant decisions.

In fact, **63% of applicants would not have installed a renewable heat technology if not for the RHI.**

## How did they find the installation process?

As with Wave 1 applicants, **the majority of Wave 2 applicants (63%) felt that that the process of installation was easy. Importantly, the lead time between the decision to install and the actual installation has decreased over time** (3 or fewer months for 33% of Wave 1 applicants compared to 44% in Wave 2).

Despite the high satisfaction rates, 62% experienced problems with the installation process, with the most common being early performance issues (reported by 40% of all applicants).

## How did they find the application process?

As well as the lead time decreasing, **Wave 2 applicants are also taking less time to complete the RHI application** (55% take 0-4 days, compared to 41% in Wave 1) **whilst at the same time encountering fewer problems** (35% compared to 54%).

## Are they satisfied with their renewable heat technologies?

**The majority of applicants (87%) were satisfied with the operation of their installation**, with fewer applicants reporting the use of a back-up system in comparison to Wave 1. However, fewer Wave 2 applicants were satisfied with the cost of operation, as might be expected from the increased number of operators using pellets (more expensive than other fuel types) and purchasing fuel themselves.

### **Impact of Degression?**

The small biomass tariff was degressed three times during 2014 and 39% of single applicants stated that degression had impacted their decision in one way or another. Despite this, **applicants on different tariffs reported similar pay back periods over time**, with 85% estimating that their installation would achieve pay back within 10 years.

# INTRODUCTION TO THE EVALUATION AND THIS RESEARCH PROJECT

The **evaluation** of the **Renewable Heat Incentive (RHI)** was commissioned by the Department of Energy and Climate Change (DECC). The aim of the evaluation is to understand the administration, delivery and performance of the RHI and explore its effects on the renewable heat supply chain.

The surveys of non-domestic RHI applicants were conducted by NatCen Social Research and Eunomia Research & Consulting.

Wave 2 of the non-domestic applicant survey follows on from Wave 1, conducted in early 2014, the results of which were published in the [interim evaluation report](#).

Wave 1 of the survey was conducted with a sample of all applicants who had joined the scheme from when it opened in November 2011 to early January 2014.

Wave 2 of the survey, which this report relates to, was conducted with applicants who joined the scheme between January and December 2014. Wave 2 excluded any applicant who had applied before early January 2014. The interviews were carried out by telephone. The survey was stopped when **501 interviews** were achieved, resulting in a response rate of 30%. More detail can be found in the [technical annex](#).

'Multiple' applicants<sup>1</sup>, those who have made more than one application to the RHI, comprised 16% of RHI applicants in the Wave 2 survey. More than half of these have made just two applications.

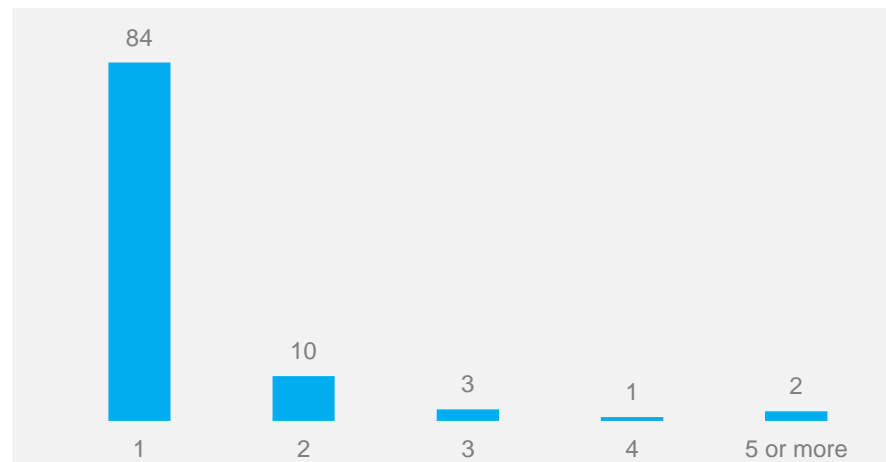
<sup>1</sup> Multiple applicants include small organisations with multiple sites, single-site organisations with multiple installations (and associated heating systems) on a single site and large organisations with portfolios of 100+ installations.

## Research Aims

Wave 2 of the non-domestic applicant survey had two main aims:

- Understand any changes to the types of applicants between those who joined the scheme in the first few years and those who joined more recently. This is in terms of:
  - Applicant characteristics
  - Applicant motivations
  - Experience of applying for the RHI
  - Experience of installing and operating their renewable heat technology installation.
- Gain a more in-depth understanding of particular aspects of the RHI, namely degeneration events, and its impact.

## Number of applications made to the RHI (%)



Base: All respondents except refusals (500)

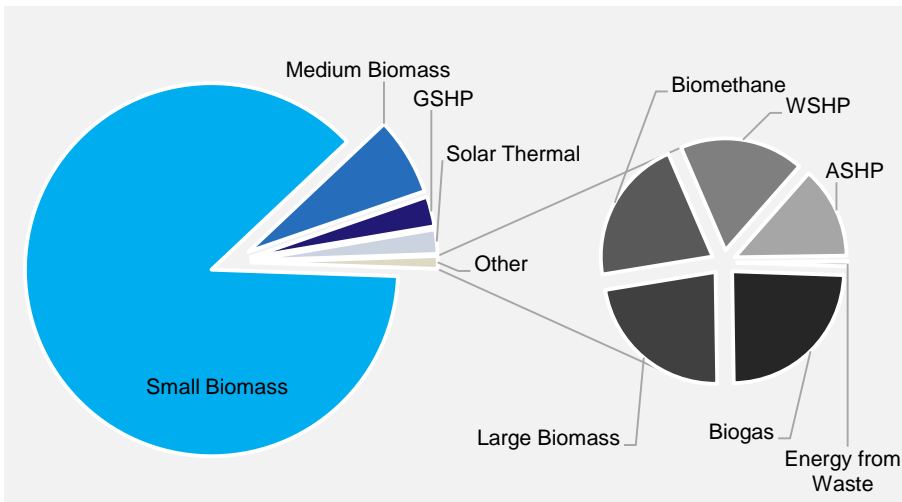
Wave 2, Question BAC1

# NON-DOMESTIC APPLICATIONS TO THE RENEWABLE HEAT INCENTIVE

Applications to the non-domestic RHI are dominated by small solid biomass boilers, accounting for **87%** of the **11,624** applications submitted from November 2011 through December 2014.

The proportion of small solid biomass has **increased** during 2014, likely spurred on by depression events.

Non-domestic applications submitted November 2011 – December 2014 by technology type<sup>1</sup>



Source: Ofgem scheme data

<sup>1</sup> GSHP: Ground Source Heat Pump; WSHP: Water Source Heat Pump; ASHP: Air Source Heat Pump

The proportion of applications from multiple applicants (those who have made more than one application to the scheme), has remained fairly constant, averaging 42% of applications through December 2014.

**Depression** refers to a budget mechanism whereby individual tariffs offered to new applicants are lowered if uptake of the scheme is higher than specified limits.

Tariffs offered to small biomass applicants surveyed in Wave 2:

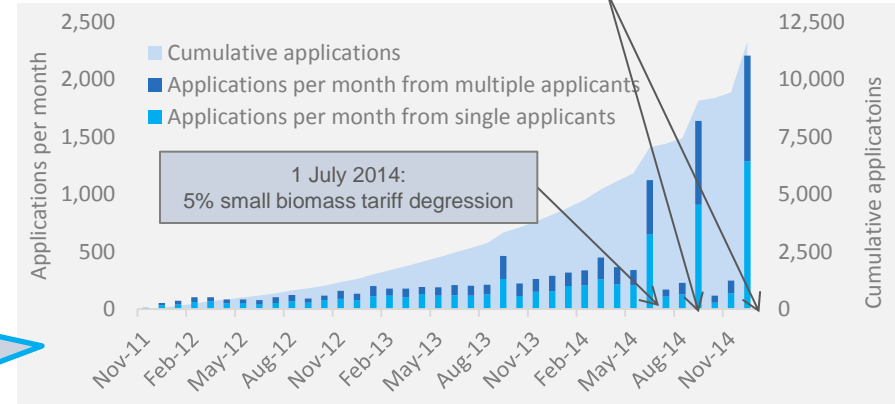
	1 Jan – 30 June 2014	1 Jul – 30 Sep 2014	1 Oct – 31 Dec 2014
Tier 1 (p/kWh) <sup>2</sup>	8.9	8.5	7.7
Tier 2 (p/kWh) <sup>2</sup>	2.3	2.2	2.0

<sup>2</sup> Tier 1 is paid for the first 1,314 peak load hours per year. Tier 2 applies after this.

Despite the depression events during 2014, the number of applications continued to increase, especially just before a tariff decrease (a depression event).

Number of non-domestic applications submitted per month November 2011 – December 2014

1 Oct 2014 and 1 Jan 2015: 10% small biomass tariff depression



Source: Ofgem scheme data, analysed to identify multiple applicants by matching contact details.

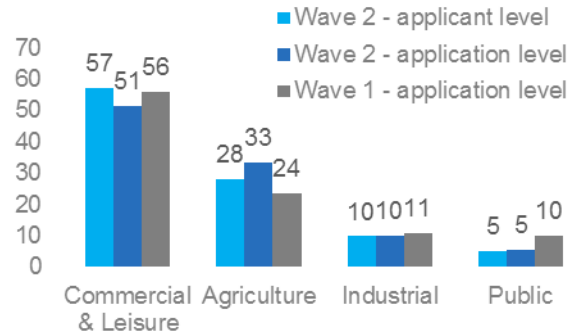
# NON-DOMESTIC APPLICANTS TO THE RENEWABLE HEAT INCENTIVE

Non-domestic RHI applicants are most likely to be from the commercial & leisure sector, with more than half of both applications (51%) and applicants (57%) coming from this sector in Wave 2. This has only changed slightly between Wave 1 and Wave 2.

The agriculture sector, which is more likely to operate in areas off the gas grid, provides the second largest number of applications (33%).

The industrial and public sectors make only 10% and 5% of all applications.

Sector of applications and applicants in Wave 1 and Wave 2 sample frames<sup>1</sup> (%)

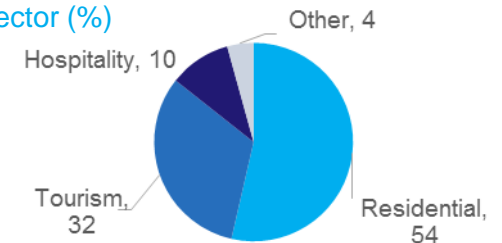


Source: Ofgem scheme data, 'Generator SIC code' field

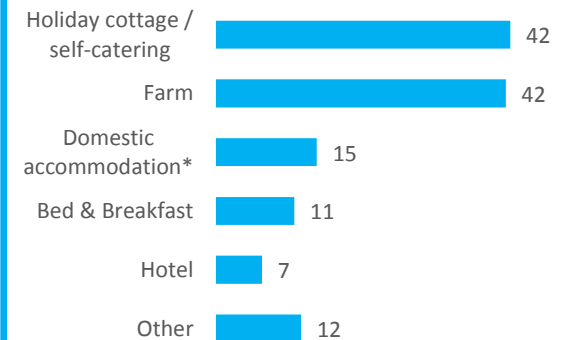
<sup>1</sup> Applicant level analysis was not done for wave 1; wave comparison is therefore at application level.

More than half of applicants in the accommodation sector (a sub-set of commercial & leisure, accounting for 35% of all applicants) are applying for the non-domestic RHI for installations which are in residential buildings. However, organisations mostly describe themselves as providing self-catering holiday accommodation and/or a farm.

Main use of the building the installation provides heat to in the accommodation sector (%)



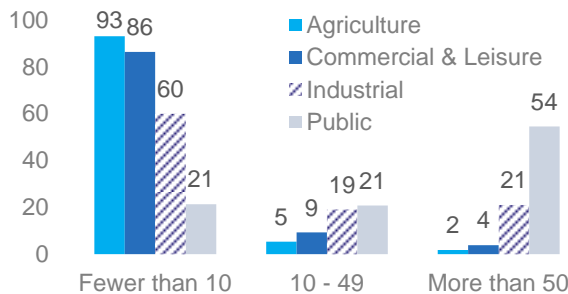
Description of the applicant organisation (%)



Base: All respondents in the accommodation sector (177)  
Respondents were able to select multiple answers to BAC7  
\*Reported under 'Other'

Wave 2, Questions BAC8 and BAC7

Applicant business size (number of employees) by sector (%)



Base: All respondents (501)  
Wave 2, Question BAC9 by sector

The majority of applicants (82%) are micro-sized organisations with fewer than 10 employees, particularly in the commercial & leisure (86%) and agriculture sectors (93%).

However, more than half of public sector organisations have more than 50 employees. Applications from the public sector are also more likely to be for non-biomass technology (8%) than from any other sector.

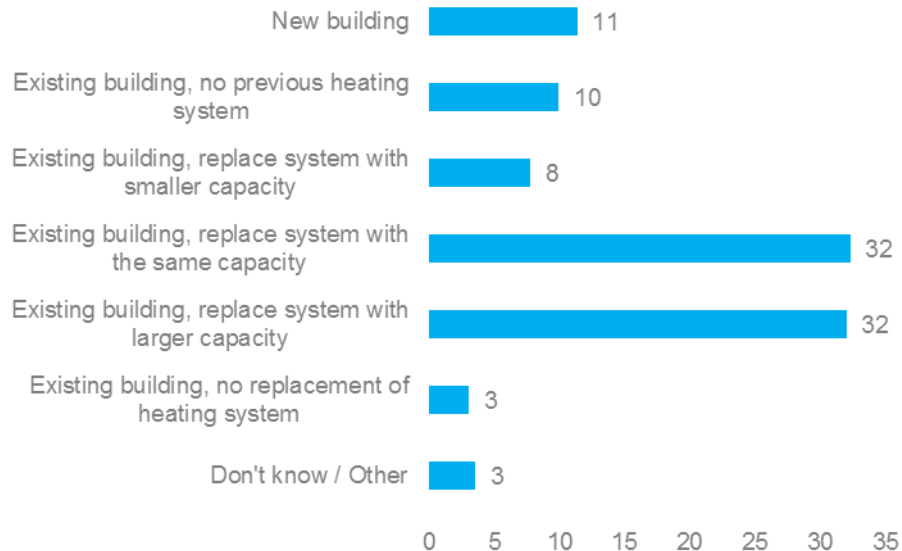
Public sector applicants are also most likely to have made more than 1 application, with 30% of those in the public sector being multiple applicants (compared to 16% in the whole population).

# INSTALLATIONS INSTALLED UNDER THE RENEWABLE HEAT INCENTIVE

Almost three-quarters (72%) of all installations are installed into existing buildings as replacements of an existing heating system.

In a small number of cases, the new renewable heat installations are of smaller capacity than the current heating system, but in most cases, the heating capacity is either remaining the same or increasing.

## Type of building renewable heat technology installed in (%)



Base: All respondents (501)

Wave 2, Questions BAC14, BAC16, BAC17, BAC18

91% of replaced systems are non-renewable, while 6% are either a mix of non-renewable and renewable or unknown.

Just 3% are replacing renewable heating systems.

## What do these different scenarios look like?

Where applicants are stating that their **new renewable heat installations are installed as replacements of an existing heating system and the capacity is increasing**, it is not known whether this increase is as little as 1 kWth or whether it is a significant increase in heating capacity due to a new heating demand. It is likely that both scenarios are occurring.

Where renewable heat is **installed in buildings with existing heating systems and these systems are not replaced** (which is the case for only 3% of installations), this could either mean a (limited capacity) solar thermal system which is installed alongside the current heating system or it could be an entirely new heating system that is responding to a new heating demand.

Where installations are **installed in buildings with no existing heating system**, they are installed in response to a change of use in the building for 41% of these installations.

The technology and size of installation varies with the type of building, while the sector of the applicant also impacts the type of building installed in.

- 45% of ground source heat pumps are installed in new buildings (see slide 21). This is likely due to greater ease of installing these in new buildings, as well as the increased energy efficiency requirements for efficient operation of these systems.
- 52% of replacement heating systems in the agricultural sector increase the heating capacity. This could be a result of better capacity estimation of old systems in the public sector or due to the RHI helping meet new heat demands in the agriculture sector.

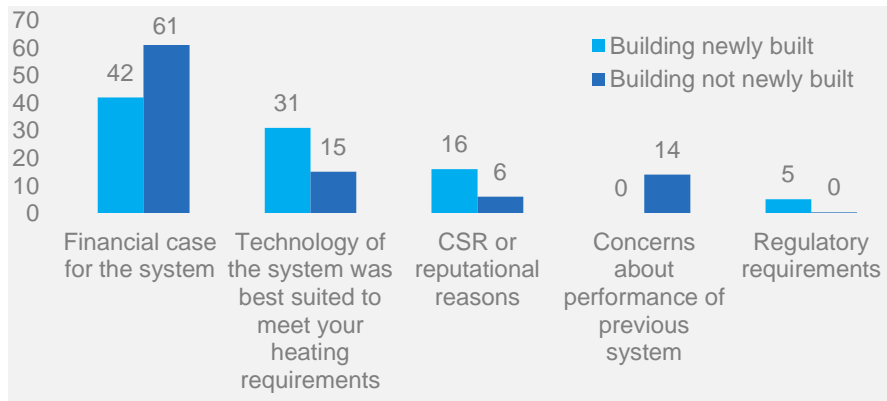
# MOTIVATIONS TO INSTALL RENEWABLE HEAT INSTALLATIONS

Non-domestic applicants are mainly motivated by financial reasons when deciding to install a renewable heating system: 58% state the financial case is the most important factor in their decision, however the decision is complex, with both technical, environmental (or CSR) and regulatory requirements feeding into many applicants' decisions.

More than a quarter of applicants (29%) select technical reasons as the most important factor, while just 7% select CSR or reputation (including environmental reasons) as the most important.

Applicants with new buildings are more likely to be motivated by the technology being suited to their requirements (31% state it is the most important factor) and less by the financial case (selected by 42%) than applicants with existing buildings (15% and 61% respectively).

## Most important factor in the decision to install renewable heat technology by whether building newly built<sup>1</sup> (%)



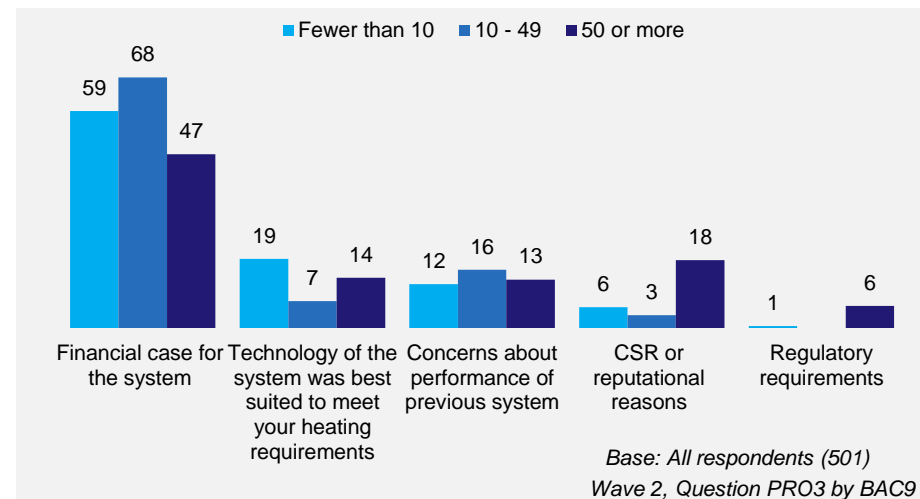
Base: All respondents that gave at least one reason, except those for whom newly built status is unknown (BAC14) and refusals. (477)

Wave 2, Question PRO3 by BAC14

<sup>1</sup> Top 5 factors only

Large businesses with 50 or more employees and those in the public sector are more likely to be motivated by CSR (though note there are overlaps between these two groups), with 65% and 59% respectively selecting this as a factor in their decision, compared to 44% of all applicants.

## Most important factor in the decision to install renewable heat technology by number of employees<sup>2</sup> (%)



<sup>2</sup> Top 5 factors only

### Changing motivation over time?

Due to changes to the questionnaire between Wave 1 and Wave 2, it is not possible to compare responses to these questions directly, however the data suggests that the most recent groups of applicants have not been as motivated by environmental reasons as the first group of RHI applicants.



# CONCERNS ABOUT RENEWABLE HEAT INSTALLATIONS

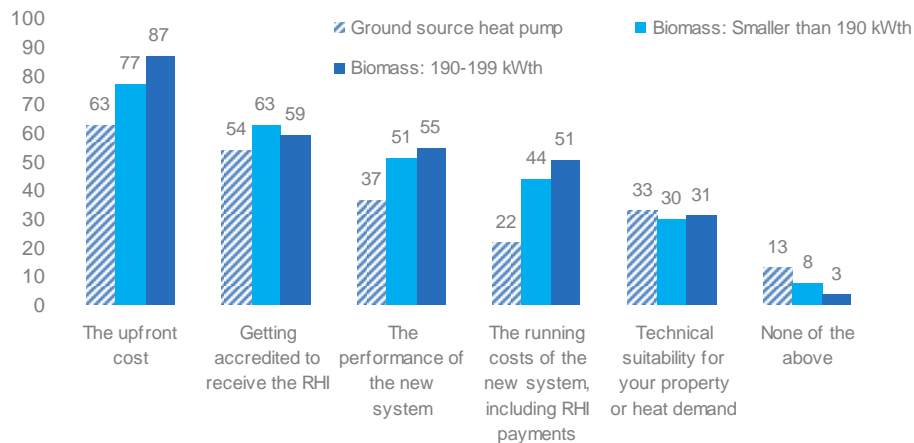
Applicants have a number of concerns prior to installing their renewable heat technology – the most prevalent are financial concerns. Less than a tenth (7%) of applicants report having no concerns at all.

74% of all applicants report a financial concern as their most important:

- Upfront costs was the most frequently cited financial concern (42%), followed by getting accredited to the RHI (20%) and running costs of the new system (8%).

Other concerns are technical but much less prevalent (16%): the performance of the new system and the technical suitability of the renewable heating technologies.<sup>1</sup>

## Prevalence of concerns by technology type<sup>2</sup> (%)



Base: All ground source heat pump and biomass respondents (490)

\*Respondents were able to select multiple answers to this question

Wave 2, Question PRO6 by technology type

<sup>2</sup> Excluding 'Stable supply of fuel'.

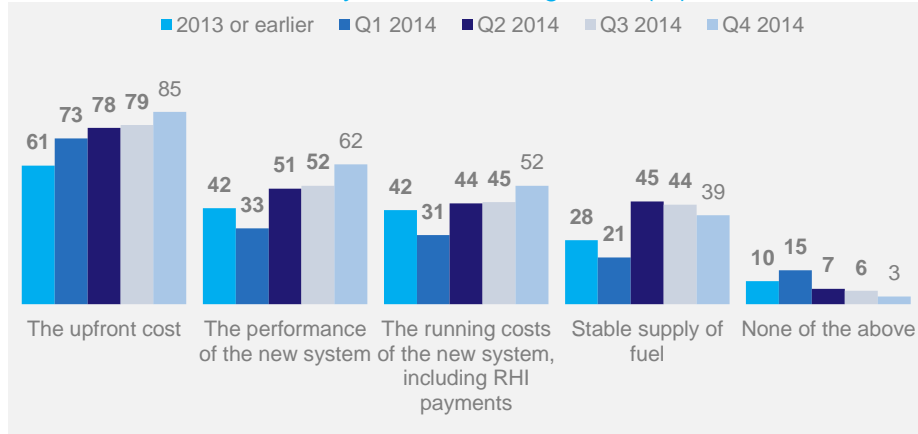
Note that the base size of 'Biomass: Larger than 199 kWth' is too small to be considered robust.

<sup>1</sup> As with motivations, it is not possible to compare directly between Wave 1 and Wave 2.

More recent applicants appear to have an increasing number of concerns (3% of those who commissioned in Q4 2014 report no concerns), though this may also be related to better recall of more recent events.

Among these, the difference in financial concerns is the most salient. The upfront cost of the installation is reported as a concern by 85% of applicants who commissioned their system in the last quarter of 2014. This is compared to 61% in 2013 or earlier. This may be driven by the increasing capacity of installations: within small biomass installations of less than 200 kWth, the average installation size has increased by more than 20kWth since the start of 2014.

## Prevalence of concerns by commissioning date<sup>3</sup> (%)



Base: All respondents (501)

Wave 2, Question PRO6 by commissioning date

\*Respondents were able to select multiple answers to this question

<sup>3</sup> Top 5 factors, excluding 'Getting accredited to the RHI'

Applicants with ground source heat pumps appear to be less concerned, particularly relating to costs; however almost two-thirds of ground source heat pump installations were commissioned in 2013 or earlier so there is significant overlap between these groups. It is unclear whether earlier commissioning dates or choice of technology is driving this trend.

# FINANCING OF RENEWABLE HEAT INSTALLATIONS: METHODS OF FINANCE AND INITIAL PREFERENCES

The majority (61%) of non-domestic RHI applicants used their own finances or balance sheet to purchase their renewable heat installation.

Other methods of financing included bank loans (used by 27%) and asset finance (9%).

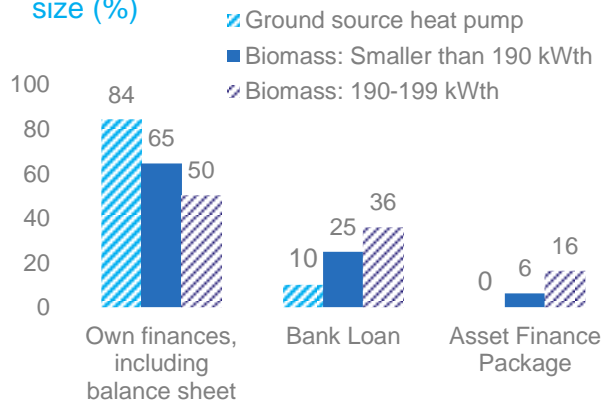
- By **technology type**, own finances have been more prevalently used to purchase ground source heat pumps than biomass boilers; this is perhaps due to them having lower average lower capital costs (as the average capacity of ground source heat pumps installed under the RHI is lower than biomass boilers’).
- Applicants from the agriculture sector have been least likely to use own finances and instead relied on bank loans.
- Across time, asset financing has been the only method that appears to show a trend. In the last quarter of 2014 (by commissioning date), **13%** of applicants used this method, compared to just **2%** of those who commissioned in 2013 or earlier, though this trend is not significant.

71% of applicants have been able to use the type of financing they initially wanted, but for 12% of all applicants a bank loan, 8% own finances and 10% other types would have been the preferred option.<sup>1</sup>

Applicants with ground source heat pumps have been more likely to receive the financing they wanted, probably as a result of smaller capital costs. This has likely enabled a larger proportion to use their own funds to purchase their equipment.

Applicants installing renewable heat technology into an existing building, without a prior heating system, reported one of the lowest levels of satisfaction with financing, with only 55% using the financing they wanted.

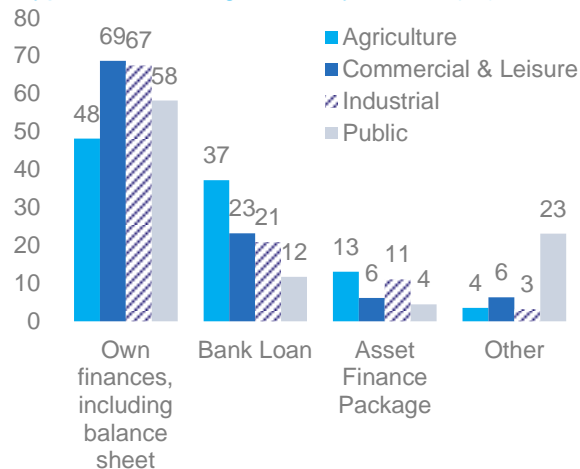
Type of financing used, by technology and size (%)



Base: All ground source heat pump and small biomass respondents (473)

\*Respondents were able to select multiple answers.  
Wave 2, Question PRO8 by technology type and installation size

Type of financing used, by sector (%)



Base: All respondents (501)

\*Respondents were able to select multiple answers.  
Wave 2, Question PRO8 by sector

## How does this compare to Wave 1?

More recent applicants have been more likely to use external methods of financing. In Wave 1, 77% of applicants used their own finances compared to 61% in Wave 2.

In Wave 1, 91% of applicants received the financing they wanted. This is significantly higher than in Wave 2 (71%).

<sup>1</sup> Numbers add to more than 100% as respondents could select multiple options.

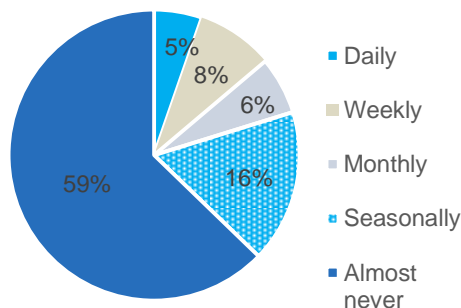
# IMPACT OF THE RENEWABLE HEAT INCENTIVE: ADDITIONAL INSTALLATIONS

63% of applicants reported that they would not have installed a renewable heating technology if not for the RHI. Defining the type of impact the RHI has had<sup>1 2</sup>

Conversely, for 37% of applicants, the reported influence of the RHI has been limited influence and has not resulted in additional renewable heat installations either because they claim that the RHI had no impact on their decision (Group 1), or because their installation displaced other renewable heat (Group 2).

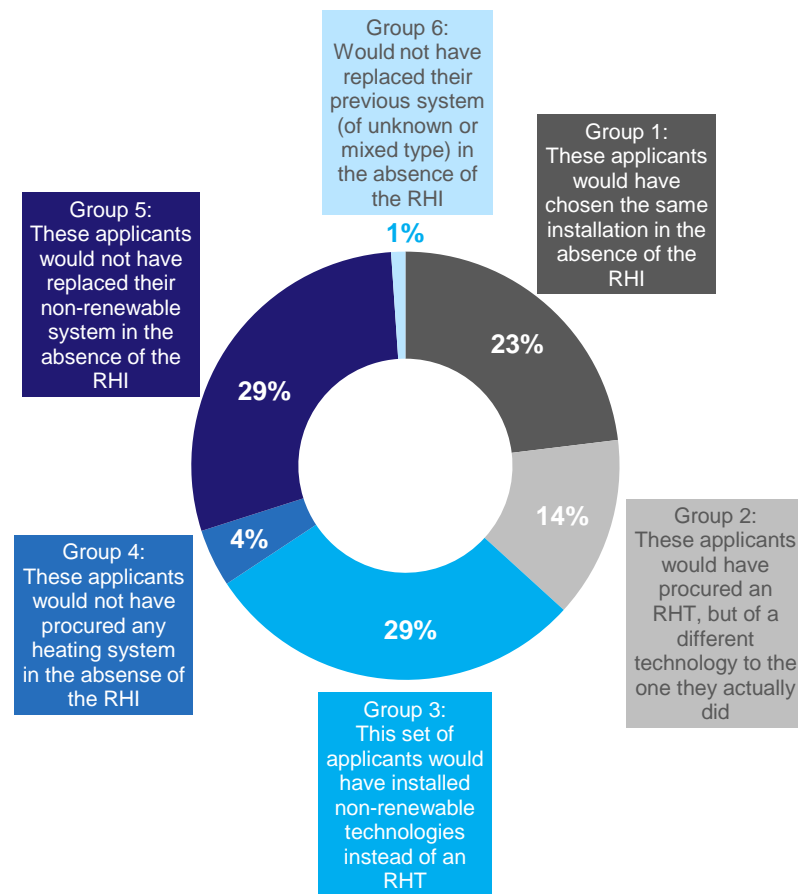
Despite the impact that the RHI is having on the number of renewable heat installations, it is important to recognise that 48% of applicants have a back-up system, which 19% use on at least a monthly basis. This means that although an entire system may be additional due to the RHI, it cannot be assumed that the system is providing all the required heat. However, it is not clear whether the back-up systems are renewable or non-renewable.

Use of back-up heating system (%)



Wave 2, Question OPE10

Base: All respondents with a back-up heating system (246)



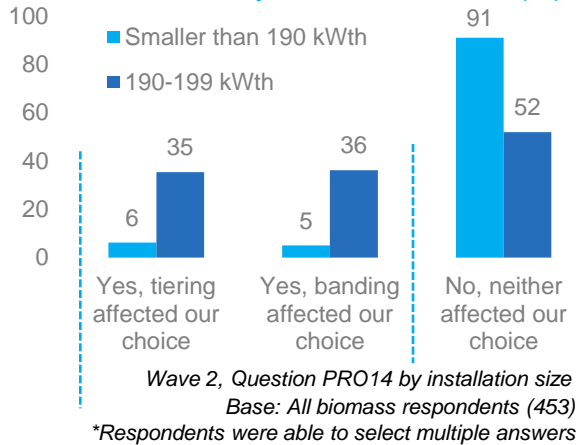
There are some characteristics of the 'no impact' applicants, which suggests that aspects of the decision-making process were impacted by the RHI even if the final decision to install was not. Although not statistically significant findings, it appears this group have applied to the RHI for more installations than those impacted by the RHI (a mean of 1.97 applications per applicant vs 1.11 and 1.44 for other applicants with retro-fitted installations). Additionally they have replaced newer systems than those in other groups.

<sup>1</sup> Further breakdown of the groups is provided in [the Appendix](#).

<sup>2</sup> RHT: Renewable Heat Technology

# IMPACT OF THE DESIGN OF THE RENEWABLE HEAT INCENTIVE: TIERING AND BANDING'S IMPACT ON THE SIZE OF INSTALLATION

## Impact of tiering and/or banding on installation size, by size of installation (%)



Overall, 18% of biomass applicants state that either tiering or banding has had an impact on the size of installation deployed.

48% of biomass applicants with installations between 190 and 199 kWth (the top end of the small biomass band) report having been impacted by either tiering or banding (or both). No ground source heat pump applicants were impacted by either tiering or banding.

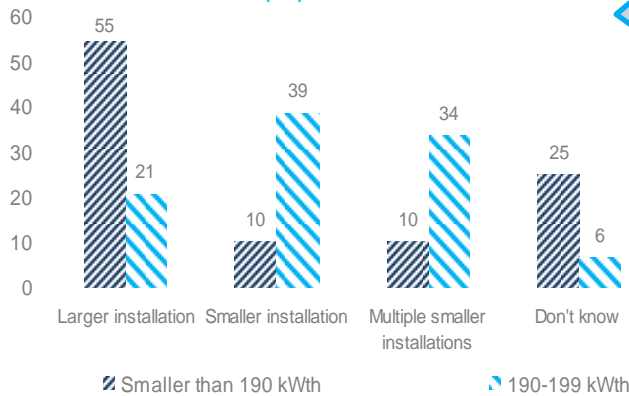
All biomass applicants appear to have been almost equally impacted by tiering and banding (13% and 12%, respectively).

**'Banding'** means that higher tariffs are available for smaller installations within certain technology type groupings, including biomass and biogas: these bands are the 'small', 'medium' and 'large' sizes referred to throughout this document.

**'Tiering'** refers to the fact that a higher tariff is paid for the first 1,314 hours of operation (annually) for certain biomass and heat pump tariff bands.

**Sizing of small biomass:** 23% of all biomass were in the 190-199 kW range.

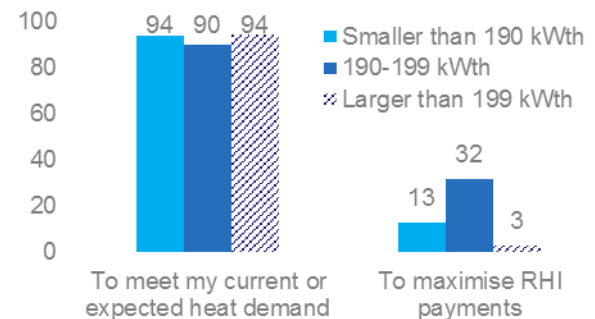
## Resulting impact of tiering/banding, by size of installation (%)



Of those who were impacted, applicants were evenly split between tiering/banding resulting in selecting a larger installation (33%), a smaller installation (27%) and selecting multiple smaller installations (26%), though again the results are different depending on the size of the installation actually installed.

Overall, 17% of all applicants report that the installation has been sized not just on the basis of the heat demand, but also on the RHI income.

## How the size of the installation has been optimised, by size of installation (%)



Note that for all charts the base size of Larger than 199 kWth is too small to be considered robust.

# IMPACT OF THE DESIGN OF THE RENEWABLE HEAT INCENTIVE: DEGRESSION

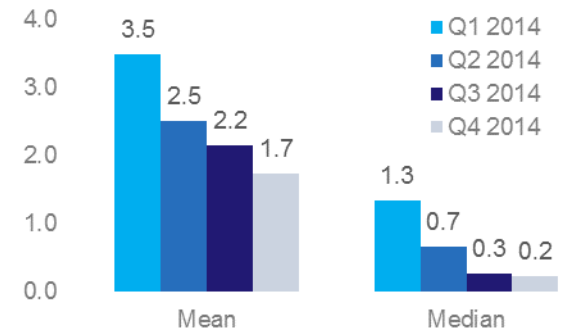
A majority of all applicants (57%) are aware of tariff degression; this varies by technology, with ground source heat pump applicants the least aware - this is to be expected as they have not been impacted by degression.

39% of all single applicants state that tariff degression has influenced at least one of the following decisions: the timing of their installation or application, its technology type, size and how it has been operated. 45% of multiple applicants state the same in relation to degression's impact on any of their applications and installations.

Over time, there is an increasing trend for degression to have an influence on the timing of the commissioning of installations and when applications are submitted to the RHI (33% of all single applicants report these to be impacted). This is expected as small biomass applicants have been impacted by degression events at the end of Q2, Q3 and Q4.

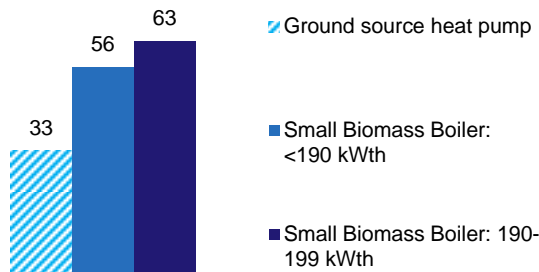
Choice of technology and the size of installation has also been impacted (for 6% and 4% of single applicants).

The time (in months) between commissioning and the RHI application being submitted has reduced significantly in 2014



Source: Ofgem scheme data, time in weeks between commissioning date and date of first submission of RHI application, by date of application submission.

## Awareness of degression, by technology type / size of installation (%)

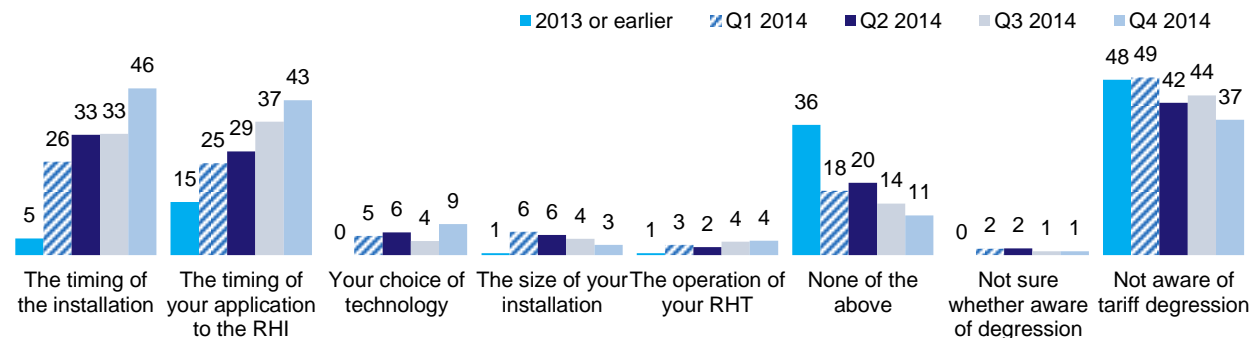


Wave 2, Question PRO19 by technology type and installation size

Base: All respondents (501)

Note that the results for 'Medium/Large biomass boiler: >199 kWth' and 'Other' technology types are not shown because the base sizes are too small for the results to be considered robust.

## How degression has impacted applicants' decisions, by commissioning date (%)



Base: All single respondents (369)

Wave 2, Question PRO19 and PRO20A by commissioning date

# BIOMASS FUELS USED AND COSTS

The majority of applicants report buying their biomass fuel (73%) of which the most common form is pellets (53%).

The number of applicants buying some or all of their biomass fuel and using pellets was greater in the Wave 2 survey compared to Wave 1. As pellets are the most expensive form of fuel on a per tonne basis, this suggests that more recent RHI applicants are overall spending more money on biomass fuel.

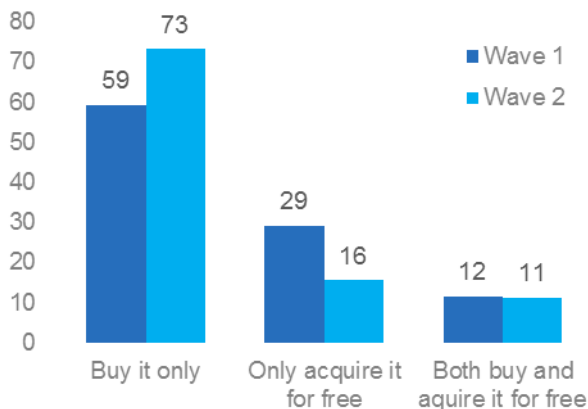
Indeed, Wave 2 applicants reported the median price of biomass fuel to be £208 per tonne compared to between £150-£199 per tonne for Wave 1 applicants.<sup>1</sup>

The overall majority of applicants (65%) are satisfied with the costs of operating their biomass boiler.

However there appears to have been a drop in satisfaction levels, with 65% of Wave 2 applicants reporting to be satisfied with operating costs compared to 77% of Wave 1 applicants. A quarter of Wave 2 applicants were unable to answer this question and 11% reported dissatisfaction with operating costs.

In 2014, the average cost (capital and installation) of installing a biomass boiler was £705 per kWth of capacity.<sup>2</sup>

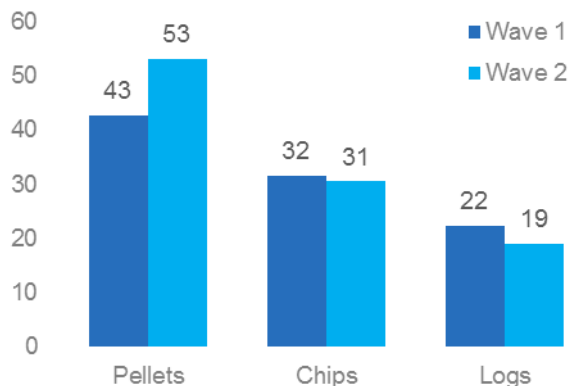
Comparison of biomass sources (%)



Wave 2, Question OPE16. Wave 1, Question OPE25

Base: All biomass respondents (984)

Comparison of type of biomass used (%)



Wave 2, Question OPE15. Wave 1, Question OPE24

Base: All biomass respondents (984)

<sup>1</sup> Direct and exact comparison between the two waves is not possible due to the change in questionnaire between Wave 1 and Wave 2: in Wave 1 the questionnaire asked applicants to select a price band whereas Wave 2 asked applicants to give an exact cost, rounded to the nearest £5.

<sup>2</sup> Source: Ofgem admin data: Applicants self-reported capital and installation costs, with obvious outliers removed.

# EXPECTED PAY BACK PERIOD

A key rationale supporting the RHI policy is that applicants will receive a pay back on their investment in a renewable heat technology installation over time. Approximately 85% of applicants expect it to pay back within 10 years.

Applicants were asked to estimate the pay back period on their installation as part of the Wave 2 survey. Each applicant will have used different information, sources and tools to estimate this figure.

## Potential factors applicants might draw on to calculate pay back periods

- New equipment and installation costs
- Fuel costs for new installation
- Avoided or reduced equipment and installation costs associated with alternate system
- Avoided or reduced fuel costs associated with alternative or existing system
- RHI payments
- Maintenance costs associated with new, existing or alternate system

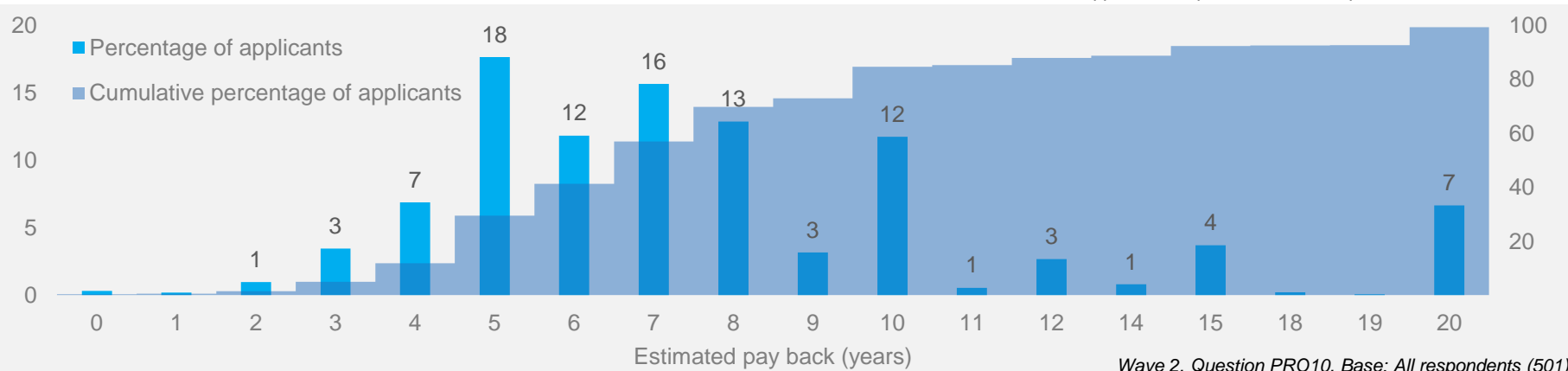
## Are estimates of pay back changing over time?

As depression has reduced the small scale biomass RHI tariff, it might be expected that applicants' estimate of pay back may have increased over time. However, applicants on lower RHI tariffs report similar expectations of pay back as older applicants on higher tariffs.

Positive changes in other costs and benefits may be responsible for the similar assessment of pay back, but survey results on operating costs indicate a worsening prospect for pay back. Furthermore, though applicants are increasingly concerned about the capital cost of their equipment, the cost of equipment per kW does not appear to be changing.<sup>1</sup> Fuel costs associated with both non-renewable<sup>2</sup> and renewable<sup>3</sup> systems are decreasing over time.

How accurately applicants are estimating pay back is unknown.

## Anticipated pay-back period for renewable heat installation (first 20 years) (%)



<sup>1</sup> Based on information in applicants' application forms <sup>2</sup> Based on DUKES data  
<sup>3</sup> Based on biomass applicants response to wave 2, question OPE24

# INSTALLATION EXPERIENCE

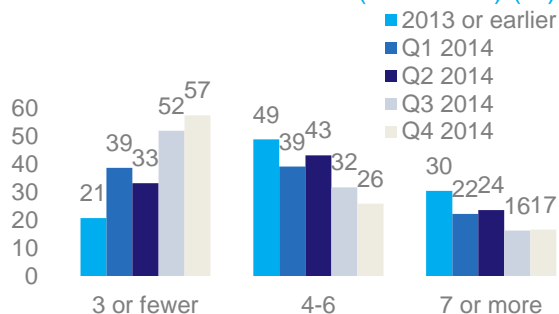
## How did applicants find their installers?

More than 6 in 10 of Wave 2 applicants surveyed learned about their installer through a recommendation from someone else (48%) or from previous experience (13%). A similar result was found in Wave 1 (58% total). 14% used a web search (23% for Wave 1 applicants) whilst 9% (the same figure applies for both waves) of applicants learned about them at an event.

The time taken between the decision to install and the actual installation is decreasing over time.

- In Wave 1, the lead time was 3 or fewer months for 33% of applicants. This has increased to 44% in Wave 2.

Lead time between the decision to install and the actual installation (in months) (%)



Wave 2, Question PRO1 by commissioning date

Base: All respondents except refusals (493)

63% of applicants felt that that process of installation was either 'very' (23%) or 'fairly' (40%) easy.

The same proportion of applications responded this way to the Wave 1 survey.

62% of applicants experienced problems with the installation of the system itself

Despite the satisfaction with the installation process, many applicants reported problems with the installation of the renewable heat technology itself. The most commonly cited problems were early performance issues (40% of all applicants), delays in installation process (28%) and unexpected costs (25%). The latter was more frequently cited by Wave 1 applicants (33%) suggesting a slight improvement in this particular aspect of the installation process over time.

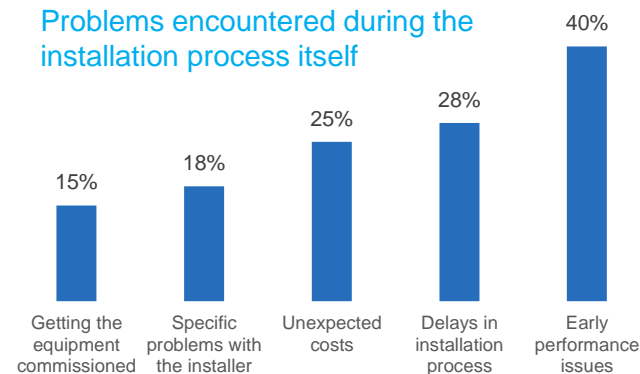
Applicants with biomass boilers smaller than 190 kWth (19%) were less than half as likely to report being surprised with unexpected costs than those with boilers sized 190-199 kWth (38%).

23% of applicants had one or more of the following problems:

- Finding a suitable installer: 17%
- Getting suitable advice: 14%
- Finding a building services/system designer: 6%

This improvement over time is also indicated within the Wave 2 survey itself. Although the most frequently cited problem, the number of applicants citing early performance issues appears to steadily decrease over time, from 52% in 2013 or earlier to 37% in Q4 2014. However, this trend is not statistically significant.

Problems encountered during the installation process itself



Wave 2, Question PRO24

Base: All respondents (501)



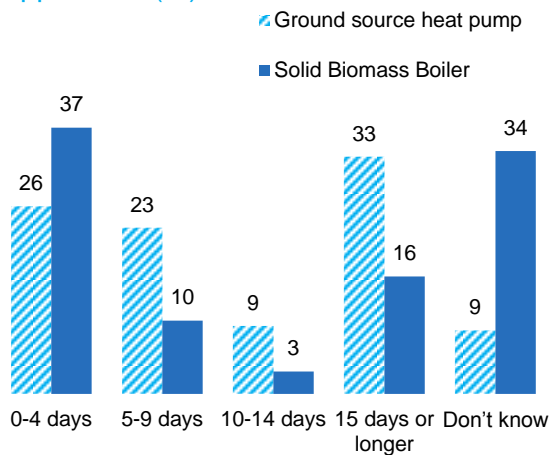
# RHI APPLICANT PROCESS: TIME TAKEN AND EXPERIENCE

Applicants appear to be completing the RHI application in less time than before.

Excluding those that selected 'don't know', 55% of respondents report having completed the RHI application in 0-4 days. By comparison, 41% of Wave 1 applicants took 0-4 days.

- A number of applicants in Wave 2 rushed to complete applications before depression events, so the decrease in time may be as a result of this rather than a change in the application process.

## FTE time taken to complete RHI application (%)



Wave 2, Question RHI2 by technology type

Base: All respondents (501)

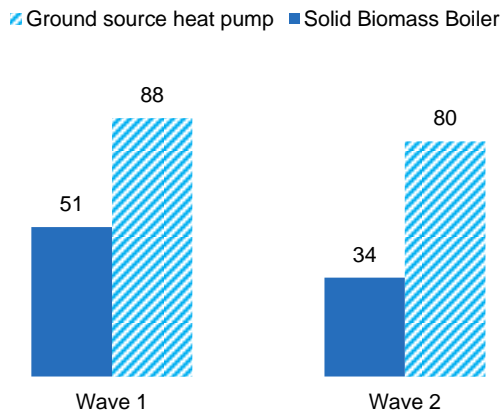
Note that the result for 'Other' technology types is not shown because the base size is too small for the result to be considered robust.

RHI applicants are encountering fewer problems.

Wave 2 applicants were less likely to report any problems with completing the application (35%) than Wave 1 (54%), with biomass boilers proving to be the least troublesome and ground source heat pumps the most likely to cause problems.

It should be noted, however, that only 67% of Wave 2 applicants had their applications assessed at the time of the survey, compared to 88% in Wave 1, and therefore the figure above may be subject to change if applications are not progressed smoothly.

## Applicants who experienced problems with the application process (%)



Wave 2, Question RHI3; Wave 1, Question RHI2 by technology type

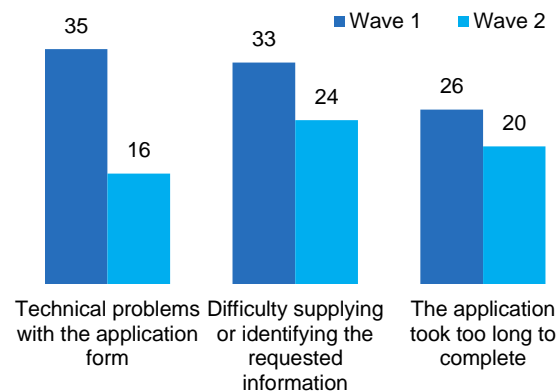
Base: All respondents (1103)

Note that the result for 'Other' technology types is not shown because the base size is too small for the result to be considered robust.

What problems are applicants having?

As the total number of applicants experiencing problems is decreasing, the incidence of specific problems has also decreased since Wave 1.

## Problems experienced with the RHI application (%)



Wave 2, Question RHI3 and RHI4; Wave 1, Question RHI2 and RHI3  
Base: All respondents (1103)

## Do multiple applicants think the RHI application process is improving?

Although 17% of multiple applicants perceived the process to be getting better, the same proportion also believed it was getting worse. The remaining multiple applicants either felt that it was not changing or didn't know.

# OPERATION AND USER SATISFACTION

Overall, 87% of Wave 2 applicants were either 'very' or 'fairly' satisfied with their renewable heat technology.

This high satisfaction rate was experienced across the different technologies, with similar rates for biomass and ground source heat pumps. This is also similar to the rate reported by Wave 1 applicants (90%).

## Would applicants recommend their technology to others?

88% of applicants would recommend their renewable heat technology to others. This figure was as high as 95% for ground source heat pumps applicants (it was 88% for biomass boilers).

	Wave 1	Wave 2
Satisfied with operating costs	77%	65%
Meets heating needs most/all of the time	95%	95%
Have a back-up heating system	60%	48%
Very/fairly satisfied with their installation	90%	87%

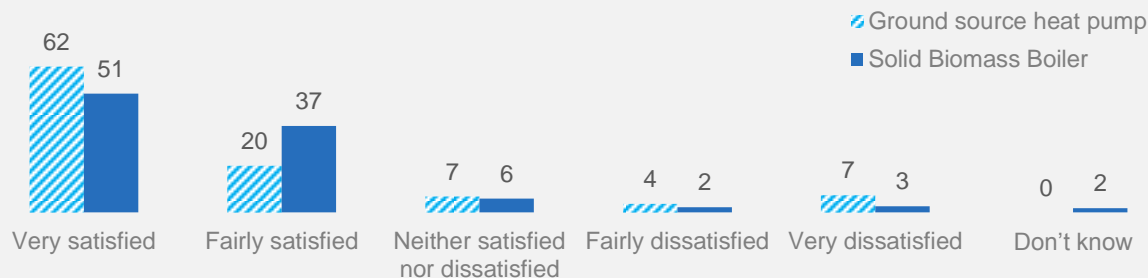
Not being able to generate enough heat was the most common reason for why applicants' installations did not meet their heating needs (36% of all whose installations did not meet their needs all the time), followed by a lack of reliability (26%).

Applicants listed the following reasons for having a back-up system:

- 1) to provide extra heat during extreme weather conditions (42%)
- 2) when insufficient temperature is provided by the installation (42%)
- 3) when the installation is out of service (39%)

When compared to Wave 1, the number of applicants citing reason 1 appears to have decreased (from 53%) whilst the number citing reason 3 has increased (from 34%), though these differences are not significant.

## Overall satisfaction with technology by technology type (%)



Base: All respondents (501)

Note that the result for 'Other' technology types is not shown because the base size is too small for the result to be considered robust

Wave 2, OPE1 by technology type

# SUMMARY: COMPARING APPLICANTS ACROSS TWO SURVEY WAVES

	Summary of Wave 1 Applicants Joined the scheme November 2011 - December 2013	Summary of Wave 2 Applicants Joined the scheme January 2014 - December 2014
<b>Profile</b>	The majority of applicants are micro-sized businesses. Just over half come from the commercial & leisure sector.	
	The majority of applications are for biomass, especially small biomass (smaller than 200 kWth)	Applications are increasingly dominated by small biomass installations, particularly at the top end of the bracket (190 – 199 kWth).
<b>Motivations</b>	Financial motivations (including access to biomass fuel) are key to installing renewable heat. For the earliest applicants, environmental reasons are also significant. Around one quarter would have installed their installation in the absence of the RHI.	
<b>Financials</b>	The vast majority of applicants are able to use their own funds to finance their installation and are satisfied with this.	Applicants are increasingly reliant on third party financing though the majority still use their own funds. An increasing number of applications are unable to access their preferred method(s) of financing.
	Most applicants expect to pay back their installation well within the 20-year duration of the RHI payments.	
<b>Installation experience</b>	Two-thirds of applicants find the installation process easy. However, the same proportion also experience problems.	
<b>Experience of Technology</b>	Applicants are on the whole very satisfied with the operation of their system and find that it meets their heating needs most or all of the time.	
<b>Experience of RHI</b>	Many applicants experience problems with the RHI application process and find that it takes a long time.	Time spent on the RHI application form has decreased and fewer are experiencing problems with it.

# ADDITIONAL QUALITATIVE RESEARCH WITH NON-DOMESTIC BIOMASS SUPPLY CHAIN

## Research Note

Interviews were conducted with 14 installers of larger biomass installations and 5 biomass installation manufacturers. This is presented in full as an accompanying annex found here:

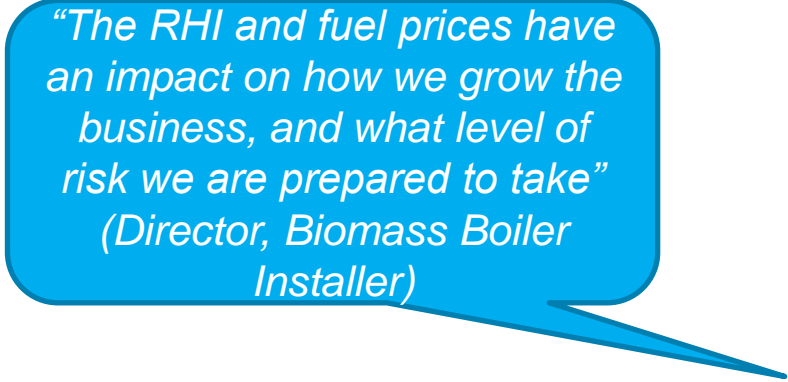
<https://www.gov.uk/government/collections/renewable-heat-incentive-evaluation>

Whilst not to be considered representative of the Biomass installer supply chain, the research presents a range of views held on the biomass market situation.

## Key findings

Significant Growth in the biomass market since 2009 was reported to be attributed to three key factors: the RHI, increased consumer and lender confidence and the historic increases in oil prices;

- Competition was reported by participants to have increased considerably as the market has grown. This was primarily put down to an increase in new entrants;
- The dominance of biomass in the renewable heat industry was confirmed by participants and attributed to the fact that biomass was perceived to be the easiest retrofit solution as well as seen as better suited to old, inefficient properties than other technologies;



*“The RHI and fuel prices have an impact on how we grow the business, and what level of risk we are prepared to take”  
(Director, Biomass Boiler Installer)*

- Participants believed that the RHI tariff for biomass was more generous when compared to the tariff for other renewable heat technologies;
- Despite some perceived negative impacts such as depression sometimes leading to rushed installations, and some instances of tariffs driving undersized boilers, participants were generally positive about the perceived impact the RHI has had on the sector; and
- Although participants had confidence and trust in the RHI, there were concerns that the scheme would not be around in its current form much longer.

# QUESTION INDEX

Question topic	Question reference: wave 2	Question
Background information	BAC1	How many RHT installations have you or your organisations applied for the RHI for in total?
	BAC7	Which of the following describes your organisation? [accommodation sector]
	BAC8	What is the main use of the building the RHT provides heat to? [accommodation sector]
	BAC9	How many employees does your organisation have?
	BAC14	Is the entire building your RHT is providing heat to newly built?
	BAC16	Did any part of the building your RHT is providing heat to have a heating system prior to the installation of your RHT?
	BAC17	Was the RHT installed as a replacement of the previous heating system?
	BAC18	How does the capacity of the RHT compare to the capacity of the old system?
Procurement and installation of renewable heat technology	PRO1	What was the lead time, in number of months, between the decision to install the RHT and the actual installation?
	PRO3	Which one of these factors was most important?
	PRO6	Were you concerned about any of the following before installing your system?
	PRO8	Where did you obtain financing to install the RHT?
	PRO10	What is the anticipated pay-back period for your RHT?
	PRO14	Did the banding or tiering of tariffs affect your decision about the size of installation to install?
	PRO15	In what way did the banding and/or tiering affect the size of the installation?
	PRO16	How has the size of your installation been optimised?
	PRO19	Are you aware of tariff degression?
	PRO20A	Did tariff degression influence any of the following?
	PRO24	Did you encounter any of the following problems with the installation of your system itself?
Renewable Heat Incentive	RHI2	How many full time equivalent days did it take to complete the application for the RHI?
	RHI3	Did you have any problems completing the application?
	RHI4	What problems were these?
Operation of renewable heat technology	OPE1	How satisfied are you overall with your RHT?
	OPE10	How often do you use your alternative system?
	OPE15	In what form does the fuel enter your boiler?
	OPE16	How do you source your fuel?

# METHODOLOGICAL NOTES

Wave 2 of the survey, which this report relates to, was conducted by telephone in February 2015. 501 responses were received, with applicants answering between 37 and 89 questions, depending on their and their installation's characteristics.

'Multiple' applicants, those who have made more than one application to the RHI, were excluded from Wave 2 of the survey if they had made their first application before January 2014.

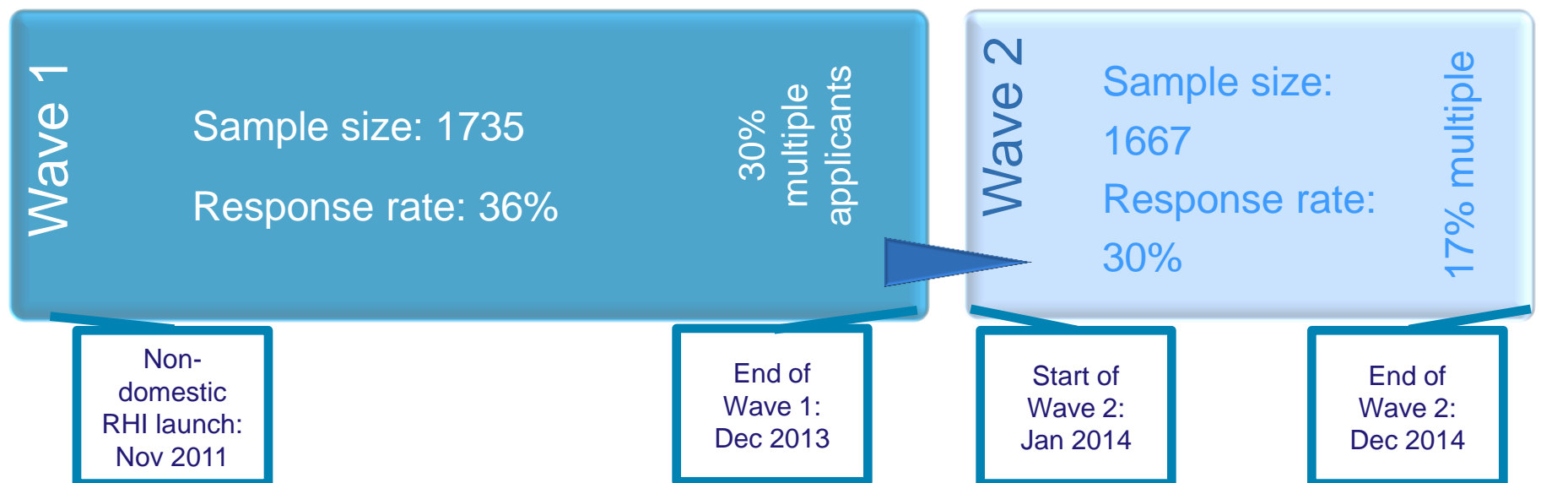
Furthermore, only one application from multiple applicants who had made all their applications since January 2014 was selected for the sample frame of Wave 2 in order to ensure that no applicant was able to respond to the survey more than once.

Biomass and ground source heat pumps were the only technologies large enough for sub-group analysis. Although some care should be exercised when interpreting the results, since the size of the ground source heat group was 37.

Results of the survey were weighted back to the composition of the population to account for bias related to different response rates among different groups. See further details in the [technical annex](#).<sup>1</sup>

Unless otherwise stated, all differences reported have been tested at a significance level of 0.05, indicating a 5% risk of concluding that difference exists where there is no actual difference.

Note: striped bar charts have an unweighted base size of lower than 50 responses.



<sup>1</sup> [www.gov.uk/government/collections/renewable-heat-incentive-evaluation](http://www.gov.uk/government/collections/renewable-heat-incentive-evaluation)

# ADDITIONALITY GROUPS

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Replaced a previous heating system?	Yes & No	Yes & No	Yes & No	No	Yes	Yes
Was the old system renewable heat technology?	Yes & No	Yes & No	No	N/A	No	Unknown
Would have installed the same renewable heat technology anyway?	Yes	No	No	No	No	No
Would have installed a different renewable heat technology?	No	Yes	No	No	No	No
Would have installed a non-renewable heat technology?	No	No	Yes	No	No	No
Would not have installed a new heating system at all ?	No	No	No	Yes	Yes	Yes
Indication of impact of RHI	None	Low	High	High	High	Medium
% of Wave 2 applicants	23%	14%	29%	4%	29%	1%
Description	These applicants would have chose the same installations in the absence of the RHI	These applicants would have procured renewable heat, but of a different technology to the one they actually did	These applicants would have installed non-renewable heating technologies instead of renewable	These applicants would not have procured any heating system in the absence of the RHI	These applicants would not have replaced non-renewable heating in absence of the RHI	These applicants would not have replaced their previous heating system in absence of the RHI

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