



Department for
Business, Energy
& Industrial Strategy

Evaluation of the Green Homes Grant Voucher Scheme (GHGV)

Process Evaluation Report

Ipsos with Energy Saving Trust, Building Research Establishment, and UCL

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Executive summary

This executive summary presents key findings from the Process Evaluation of the Green Homes Grant Voucher Scheme (GHGVS), covering the period from the implementation of the Scheme (September 2020) until the time of writing (August 2021).

Overview

- **Awareness of the Scheme was fairly high, both amongst installers and the general public.** However, the Scheme's reach was lower than it could have been: the Scheme had funding able to benefit around 600,000 homes, but applications were made for only 113,739 properties.
- Evidence from across the evaluation suggests that **the quality of installations under the Scheme is typically of a high standard.** Evidence from the survey of applicants indicates **satisfaction with completed works** and typically high quality of works reported by auditors.
- The Scheme is thought to be **driving quality through its requirement for installers** to be Trustmark registered, PAS certified (for energy efficiency measures) and Microgeneration Certification Scheme (MCS) certified (for low carbon heating measures) and there are suggestions of a link between high take-up of installer accreditations and certifications (with 61% of respondents gaining at least one accreditation to participate in the Scheme) and quality of outcome. This causal assumption will be investigated further in the outcome evaluation.
- In qualitative interviews with applicants some **issues around installer wrongdoing and installers overcharging were raised.** An initial analysis of cost data (compared to industry averages¹) found that the costs incurred for installing GHGVS measures are broadly comparable to the industry averaged costs with no divergence of considerable magnitude. Although the cost of installing insulation measures under the GHGVS appears to be slightly higher than the industry averages, the cost of installing low carbon heat measures appears to be overall comparable to these.

The applicant experience of the Scheme

- According to Scheme data, **most applicants (57%) applied for vouchers via the low-income Scheme.**² Almost nine in ten applications were submitted by occupiers (covering homeowner-occupiers and tenants applying on behalf of their landlord), and 90% of applications were for houses. A comparison of the evaluations' findings around

¹ Ecuity Consulting LLP and MCS Service Company Ltd were used as sources for industrial average figures – see Annex 5.

² The low-income scheme did not assess household income but used receipt of specific benefits as a proxy. This included disability benefits which are not necessarily means tested.

the proportion of applicants likely to be in fuel poverty (see Annex 5) suggests that the GHGVS has been successful in reaching households who are likely to be fuel poor.

- The participant survey data suggests that the number of low-income Scheme applicants includes a high proportion assessed as likely to be in fuel poverty (54% vs. 25% on the main Scheme), which suggests that **the targeting of the Scheme has been successful in encouraging fuel poor households to participate**.
- However, it is notable that **those likely to be in fuel poverty are less likely than average to have had at least one measure installed by the time of the survey**: only 42% had completed at least one installation (vs. 52% not likely to be in fuel poverty and 43% for whom an assessment could not be made). This may indicate the presence of other barriers to completing installations which are being experienced by fuel poor households.
- Considering **barriers, challenges, and enablers**:
 - Barriers to uptake reported by non-applicants included: financial concerns around **upfront costs** (even after vouchers were applied) and **perceived long payback periods; confusion** over figures presented on Scheme and/or **eligibility criteria**; perceived level of disruption involved in installation; a lack of perceived need for measures; and **perceived high effort** and difficulty involved in identifying appropriate measures and searching for installers.
 - Challenges to participation reported by applicants included: a **lack of clarity** as to whether vouchers could be used alongside other funding; **specific administrative issues** for landlord applicants; a **lack of installer availability; delays to voucher issuance** and **poor communication** from Scheme administrators.
 - Enablers to participation the Scheme, as identified by applicants, included: general clarity of information about the Scheme (excepting the point mentioned above); general clarity around the **application process**; the **process for redeeming vouchers**; and the **overall concept** of the Scheme.
- 89% of occupiers and 87% of landlords responding to the survey said there was at least one measure they had considered installing prior to the Scheme, with the cost of improvements being the main barriers to applicants installing the measures outside of / prior to the Scheme.
- By participating in the Scheme, most homeowner-occupiers (86%) reported in the survey that they were **looking to save money on energy bills, make their properties warmer** (70%) or **reduce their energy use** for environmental reasons (61%). In qualitative interviews, 'doing their part to help the environment' was a prominent motivation.
- Amongst landlords, making the property warmer or more comfortable for tenants was the most frequently mentioned motivation (75%) with 65% stating **a desire to bring the property up to modern standards**.
- Most applicants said they had not had any improvements made to the relevant property through other government or local authority Schemes prior to participating in the

Scheme, suggesting the **GHGVS was successful in engaging those who had not been reached by previous Schemes.**

- **Landlords were significantly less happy with the application process than occupiers**, with 63% expressing dissatisfaction with the process of applying to a voucher on the Scheme, compared to 42% of occupiers – this was potentially because landlords do not live at the address of application and frequently submitted applications for more than one property which may have created more administrative delays.
- There was an almost **even split amongst applicants completing the survey between levels of overall satisfaction vs. dissatisfaction with the Scheme**,³ with degree of satisfaction correlating closely with whether the applicant's installation was complete by the time of survey. Applicants whose installations were not complete were more likely to be dissatisfied with the Scheme overall.
- **The majority (58%) of applicants said they would be likely or very likely to consider other future measures**⁴. Amongst those who had had at least one measure installed at the time of participating in the survey, the proportion of those likely to consider future measures was higher (78% as compared to 41% of those who had had no measure installed). This was also the case amongst those reporting overall satisfaction with the Scheme: 87% of those satisfied with the GHGVS responded that they would be more likely to consider other energy efficient or heating measures vs. 27% of those dissatisfied with the Scheme. These figures suggest that experience of the Scheme may influence onward behaviour.

Installers and supply chain

- **Most participating installers (96% of those surveyed) were businesses already in operation before the start of the programme.** Only a small number were companies or subsidiaries set up for the purpose of delivering the Scheme. Around two-thirds were micro businesses with fewer than ten employees.
- Prior to GHGVS most low-carbon heat installers were MCS-registered. **Participation into the Scheme incentivised installers to become TrustMark registered**, with 55% of installers surveyed reporting that they registered with TrustMark to be able to participate into the programme.
- **More than half (54%) of all installers participating in the survey said they were very dissatisfied with the Scheme** (only 21% were at all satisfied). In other qualitative work completed, other parts of the supply chain, particularly manufacturers, were also highly critical of the Scheme.

³ I1. Taking all your experiences into account, overall, how satisfied or dissatisfied are you with the Green Homes Grant Voucher Scheme?

⁴ I2. As a result of having energy efficient or heating improvements installed, would you say you are more or less likely to consider other energy efficient or heating? To note: this question was also posed to those who had not (yet) had measures installed / were unsure whether they had had measures installed.

- Installers consulted had experienced very challenging situations in participating in the Scheme, including **delays in getting quotes approved, delays in vouchers being issued**, and a **shortage of raw materials due to EU exit** and other non-Scheme related issues: all of which created barriers to installations. Post-installation, **issues with voucher redemption** had a significant impact on businesses' finances and their appetite for the Scheme.
- At the time of the installer survey (in June / July 2021), 12% of installers who had conducted at least one installation had had no vouchers paid and 59% were still waiting for 1-10 vouchers to be redeemed. According to the qualitative interviews with installers, some had been waiting months for the value of vouchers to be paid to them.
- The installer survey⁵ found that Scheme **had supported the creation of jobs to some extent** (typically for quotation and administration roles), but these jobs do not appear to be necessarily sustainable beyond the scope of the Scheme (i.e. they were short-term). In qualitative interviews, some installers also reported that they have laid off staff due to their negative experience of the Scheme and the impact on their company finances.
- Qualitative evidence suggests that, overall, **installers had some capacity issues in participating in the Scheme**, but that other actors within the supply chain such as training providers, certification bodies, and some manufacturers did not.
- There was consensus within the supply chain (including amongst installers) that the Scheme had been **well-publicised immediately before its launch**, but many **did not consider the communications to be sufficiently clear** (e.g., around what was expected from installers and how the Scheme would operate) and they were disappointed in the lack of consultation with industry in the design and run-up to launch.

⁵ B13: In the 12 months before your business's involvement in the scheme, how many staff were involved in the delivery of the measure(s) you are providing through the scheme?

C10: Thinking about the staff who were involved in the delivery of the Green Homes Grant Voucher Scheme just before the announcement was made on 27th March 2021 that the scheme would close to new applications on 31st March 2021. How many staff were involved in the provision of [relevant measures]?

1 Introduction

1.1 The Green Homes Grant Voucher Scheme

The Green Homes Grant Voucher Scheme (GHGVS) was launched at the end of September 2020.⁶ Initially worth £1.5 billion, it was due to run for six months only (to 31 March 2021) as part of a wider £3.05bn package of ‘Green Economic Stimulus’ Schemes to support the country’s economic recovery from Covid-19. It was expected to do this through the delivery of energy efficiency and low carbon heating measures.⁷ On the 18 November 2020 it was announced that the Scheme would be extended in time to March 2022.⁸ On 27 March 2021, it was further announced that the GHGVS would be closing to new applications at 5pm on 31 March 2021,⁹ but that all valid applications received up to 5pm on 31 March 2021 would be processed and any vouchers already issued might be extended upon request. Changes to the Scheme's extension policy were published in June, with extensions being granted in more limited circumstances from 31 July.¹⁰

1.2 The GHGVS process evaluation: scope and methodology

1.2.1 Scope

Ipsos, in partnership with University College London (UCL), Building Research Establishment (BRE), and the Energy Saving Trust (EST), was commissioned by BEIS to conduct a process, outcome, and economic evaluation that will be completed by March 2023. The process evaluation covers the implementation of the Scheme from its start date of 30 September 2020 to the time of writing at the end of July / early August 2021. The Report answers specific questions about Scheme uptake, delivery and initial results as set out below.

Theme	Evaluation question	Link to report
Scheme Delivery	<ul style="list-style-type: none"> What has been the awareness, take-up and engagement by the public and installers under the Scheme? 	Chapters 3 and 4

⁶ <https://www.gov.uk/government/news/greener-homes-jobs-and-cheaper-bills-on-the-way-as-government-launches-biggest-upgrade-of-nations-buildings-in-a-generation>

⁷ <https://www.gov.uk/government/publications/a-plan-for-jobs-documents/a-plan-for-jobs-2020>

⁸ <https://www.gov.uk/government/news/green-homes-grant-extended-for-extra-year> - This did not involve an extension of budget.

⁹ <https://www.gov.uk/government/news/government-boosts-energy-efficiency-spending-to-13-billion-with-extra-funding-for-green-homes>

¹⁰ Guidance on potential extensions were published on the gov.uk page: <https://www.gov.uk/guidance/apply-for-the-green-homes-grant-scheme>

Theme	Evaluation question	Link to report
Scheme Delivery	<ul style="list-style-type: none"> • What is the demographic make-up of applicant households? 	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> • How effective has the Scheme been at encouraging applications (and take up of installations) by low-income or fuel poor households? 	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> • What has been the impact of Covid-19 on deliverability of the Scheme for consumers and the supply chain? 	Chapters 3 and 5
Customers and Applicants	<ul style="list-style-type: none"> • What were the enablers and barriers to referrals, applications and installations? Who did this affect? 	Chapters 3 and 5
Customers and Applicants	<ul style="list-style-type: none"> • To what extent do consumers and landlords have a positive experience (engagement, assessment, installation and usage), and how is this influenced by the Scheme design? 	Chapter 3
Installations	<ul style="list-style-type: none"> • Is the Scheme delivering the number and type of installations originally expected? 	Chapter 4
Installations	<ul style="list-style-type: none"> • What has been the quality of installations under the Scheme? 	Chapter 4 (section 4.6)
Installations	<ul style="list-style-type: none"> • Are there other measures installed as a follow up to these installations? 	Chapter 4 (section 4.5)
Installations	<ul style="list-style-type: none"> • To what extent has the Scheme been affected by fraud and gaming? How effective was the Scheme at minimising potential fraud and gaming? 	Chapter 4 (section 4.7)
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • Does the energy efficiency / low carbon heating installer market have the capacity/ willingness to participate in these projects? 	Chapter 5

Theme	Evaluation question	Link to report
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • What are the characteristics of the installer firms engaging with the Scheme? 	Chapter 5
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • How is the Scheme supporting the creation and retention of energy efficiency/ low carbon heating jobs across the supply chain? 	Chapter 5
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • How has any additional installer training interacted with the capacity required for the Scheme and supported the skills installers needed to deliver quality installations? 	Chapter 5
Cost Effectiveness and Future Policies	<ul style="list-style-type: none"> • How did the voucher Scheme interact with other BEIS Schemes? What was the extent of duplication of funding? Were similar installers used for other stimulus Schemes? 	<p>These questions were not answered at this stage of the evaluation due to the relevant data being unavailable. They will be answered in the next stage of the evaluation.</p>
Cost Effectiveness and Future Policies	<ul style="list-style-type: none"> • What are the costs incurred for installing energy efficiency/ low carbon measures in homes? How do these costs compare with industry averages? 	<p>Answered in the next stage of the evaluation.</p>
Cost Effectiveness and Future Policies	<ul style="list-style-type: none"> • Is the Scheme being delivered in way that represents value for money? 	<p>Answered in the next stage of the evaluation.</p>

Theme	Evaluation question	Link to report
Cost Effectiveness and Future Policies	• To what extent has there been any inflation of costs under the Scheme?	Answered in the next stage of the evaluation.
Cost Effectiveness and Future Policies	• What are the critical success factors and barriers behind the delivery of this Scheme?	Answered in the next stage of the evaluation.

1.2.2 Analytical approach

To guide the evaluation, a framework ('evaluation matrix') was developed which set out the evaluation questions against sub-questions, lines of inquiry, and data sources. The delivery processes, the customer and installer 'journey' through the Scheme were mapped out alongside hypotheses around how the Scheme was being delivered. On this basis, additional lines of inquiry were added to the matrix. The matrix was then used to develop the questionnaire and topic guides for primary data collection.

1.2.3 Data sources

Fieldwork for this Report ran from mid-January to 5th August 2021. The evidence presented in the Report has been gathered from:

- An online survey of 3,606 applicants. A small number who could not complete online completed the survey by telephone.
- A telephone survey of 218 installers.
- Data on applicants and installers participating in the Scheme and the number and nature of measures installed ('Scheme data').
- Qualitative interviews with:
 - Scheme applicants (61 in total – comprised of: 41 homeowner-occupiers, 15 landlords, 1 tenant and 4 applying on behalf of other people),
 - Installers (16),
 - Non-applicants (18),
 - Supply chain (32 in total – comprised of: 11 manufacturers, 5 auditors, 6 trainers and 8 certification bodies),
 - BEIS staff members involved in the policy design and delivery (9).

Further detail on the sampling strategy and methodology used for each data collection activities can be found in Annex 3.

1.2.4 Strengths, challenges and limitations of the methodology

The evaluation was able to reach a **wide range of audiences** through both quantitative and qualitative methods, which were **triangulated with Scheme data** produced by BEIS and the Scheme administrator. The evaluation was resourced by an **experienced research team** who designed research tools (e.g., questionnaires and topic guides), which were then quality assured by BEIS. However, the adopted methodology presents the following limitations:

1. It was **not possible to consult with the administrator of the Scheme**. Though this did not affect our ability to map out the processes of the Scheme (as this information was collected from BEIS) nor to answer the process evaluation questions (as these focussed principally on the experience of installers and applicants and the effects of the Scheme on them), this does represent an omission of a key stakeholder voice.
2. The applicant survey may present some **self-selection bias**, resulting in a higher proportion of people with completed installations being represented in the survey responses compared to the Scheme data¹¹. This is possibly because – as demonstrated in feedback received from Ipsos telephone and email helpline - some applicants invited to the survey (incorrectly) understood that they had to have a completed installation to participate.
3. It was **not possible to assess fuel poverty status for 28% of the applicant households** in the survey. Some sub-groups are disproportionately represented in that chunk meaning that there may be some over- or under-estimation of fuel poverty levels for those groups.
4. There were **data quality issues across some of the datasets** used to conduct the analysis (including Scheme data, TrustMark, EPC and applicant survey) where records, at times, contradicted each other. A judgement had to be made to decide a priority list for trusting each dataset for each variable.

Additionally, the following **challenges** were faced which had a minimal impact on the research overall:

5. Some **issues were experienced with the quality of Scheme data** – for instance, at the time of writing, complaints data had not been accurately recorded and could therefore not be used. However, with some data cleaning and collaboration with BEIS the evaluation team produced a dataset which was representative of the Scheme delivery.
6. Installers were hard to reach and the **response rate to the installer survey** was lower than initially anticipated. However, the views expressed by those interviewed were

¹¹ While survey data were weighted by scheme type, applicant type, property type and region, this potential bias could not be accounted for by weighting as the applicant database doesn't include information about how many applicants with an incomplete installation were contacted but did not participate in the survey due to a misunderstanding of the eligibility criteria.

highly consistent suggesting that saturation of evidence from the group had been reached.

7. It was **not possible to speak to any tenants in rental properties** benefitting from the Scheme. Tenants were not eligible for vouchers, although they could apply on behalf of a homeowner, such as their landlord. Very few applied to the Scheme (and therefore their contact details were not available) and it was challenging to reach them through their landlords (as it relied on landlords being willing to promote participation in the research and the tenants being willing to participate). However, it also appears that many landlords applied to the Scheme for measures in properties whilst they were unoccupied; it seems therefore very likely that a relatively small number of tenants affected by it and the lack of representation of tenants in the evaluation evidence is largely reflective of this.

1.3 The structure and content of this Report

The remainder of this Report provides: an overview of the Scheme (Chapter 2); discussion and evaluation of the profile, the experience and perspectives of applicants / potential applicants on the Scheme (Chapter 3); discussion of the installations and measures achieved by the Scheme's full completion (Chapter 4); experiences of and effects on the supply chain / economic recovery from Covid-19 (Chapter 5); and conclusions, lessons and initial recommendations (Chapter 6).

2 Overview of the Scheme

This section provides a brief overview of the Scheme in terms of its design, delivery partners and the delivery processes ('customer and installer journeys').

2.1 The design of the programme

2.1.1 The context to the Scheme

The GHGVS is one of four 'Green Economic Stimulus' programmes announced by Government in July 2020 to support sustainable economic recovery after the pandemic.¹² Although the Scheme comprised a mix of economic and environmental goals, it was primarily designed to maximise job retention, grow the UK retrofit market, and to have a wide reach of beneficiaries, i.e. to cover fuel-poor and low-income households as well as those 'able to pay'. The Scheme offered homeowners the opportunity to apply for up to £5,000 funding (£10,000 for low-income households) to install energy efficiency improvements and low carbon heat measures in their homes. Homeowners were expected to identify a certified installer and apply for vouchers, with the installer receiving the grant funding once they had fitted the measure. Tenants were not eligible for vouchers, although they could apply on behalf of a homeowner, such as their landlord.

As set out in the Scheme's theory of change (ToC),¹³ the GHGVS was developed in response to BEIS's mission to 'Lead Britain's Recovery' out of Covid-19 and in support of BEIS post-Covid-19 priorities of Backing Business and Tackling Climate Change. Specifically, the GHGVS was expected to contribute towards:

- Economic recovery post Covid-19, including job retention and creation.
- Meeting the Government's net zero commitments.
- Helping domestic customers to reduce their energy bills and have warmer homes.

The Scheme is also embedded within the context of current occupier and private landlord behaviour in the UK. There is a lack of incentive for such consumers to take up domestic energy efficiency measures in the home currently due to the differentials between cost and initial cost savings (i.e. the payback period) and the installation of measures being perceived as overly-disruptive. Other barriers include a lack of good, impartial customer information and advice and insufficient numbers of installers. The GHGVS set out, in part, to mitigate / address these barriers.

¹² The other programmes were: the GHG Local Authority Delivery (LAD) scheme, the Social Housing Decarbonisation Fund Demonstrator (SHDFD) and the Public Sector Decarbonisation Scheme.

¹³ As the ToC is not published it has not been presented in this Report.

2.1.2 Scheme duration and timelines

As the Scheme was set-up as a stimulus, it was developed rapidly within a 12-week timeframe from design to launch.¹⁴ It was initially designed to last six months and was later extended by a year (to 18 months in total), but ultimately closed after six months following the implementation of a performance improvement plan from November 2020 to March 2021. For more information on the factors around these changes, please see the National Audit Office (NAO)'s audit of the Scheme published in September 2021.

2.1.3 Design features and their rationale

The Scheme was open to owner occupiers of domestic properties (freehold/leasehold), park homeowners and landlords who let privately or through the social rented sector. The specific focus on energy efficiency and low carbon heat measures was intended to encourage as many people as possible to implement these measures in their homes, anticipating future energy efficiency requirements. According to interviews with BEIS, it was anticipated that the Scheme might enable this change and encourage 'early adopters' to set what would hopefully become trends.

A distinction was made between primary and secondary measures to ensure that people were prioritising measures that support jobs, are cost effective and have a large impact on carbon emissions. Applicants had to install at least one primary measure and the amount towards the cost of secondary measures could not exceed the amount for primary measures. Primary measures included technologies that householders are less likely install in the absence government intervention.

The Scheme was designed with a 'strong digital component' to ensure it was accessible to a wider audience. However, as described in the NAO audit of the Scheme, published early September 2021, the Scheme's digital platform faced challenges.

In terms of enabling installers' participation, one of the stated objectives was to create a skilled workforce in a sector still quite unregulated, hence the TrustMark requirement. The final aim was to ensure that low carbon heat and energy efficiency installations were conducted following the best practices and providing quality installations to consumers.

2.1.4 Key stakeholders supporting Scheme delivery

The Scheme was delivered by a Scheme administrator contracted in August 2020. During the early stages of implementation various issues were encountered with the Scheme administrator's performance. This included issues with the Scheme's operations (i.e. applications review, digital platform delivery). The Scheme administrator did not provide a digital platform that met the Department's requirements. As such, the Scheme administrator was reliant on a greater amount of manual processing for applications. This resulted in delays in approving applications.

¹⁴ See the September 2021 National Audit Office (NAO) Report - <https://www.nao.org.uk/wp-content/uploads/2021/09/Green-Homes-Grant-Voucher-Scheme.pdf>

TrustMark is the Government Endorsed Quality Scheme that registers businesses once they have been vetted to meet required standards. Tradespeople delivering energy efficiency measures under the GHGVS were required to be TrustMark registered as well as certified to PAS 2030:2017; however, installers could also be registered to PAS 2030:2019. The 2017 standard expired in October 2021 and many installers have updated their certification to the 2019 standard throughout the lifetime of the Scheme. To install low carbon heat measures, tradespeople had to be TrustMark registered and certified through MCS for the relevant heating technology.

Applicants were able to access advice and support on improving the energy efficiency of their homes from the Simple Energy Advice (SEA) service. SEA hosted the website through which applicants could assess their eligibility for the Scheme, search for local Scheme-registered installers and apply for a voucher. As of the time of writing (early August 2021) the website still hosts information on the Scheme.

A Skills Training Competition was also launched to award grant funding to a range of suppliers to deliver accredited training at scale to the energy efficiency low carbon installation sector. This was run by the Midlands Energy Hub with the support of BEIS. Eighteen providers were selected to provide training in five areas (retrofit assessment and coordination, insulation, non-insulation fabric measures, heat pumps and solar thermal, and heating and hot water controls).

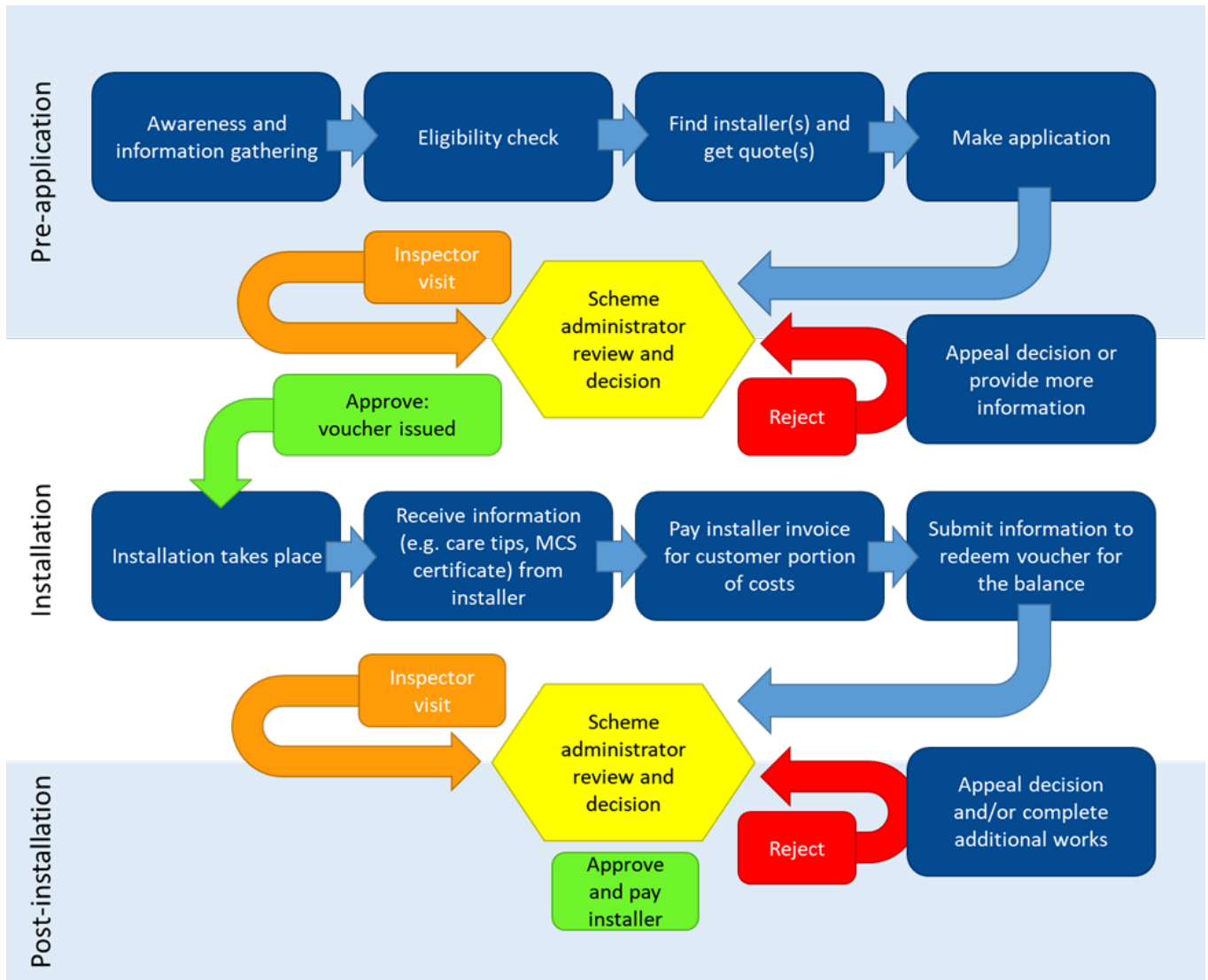
2.2 The customer and installer journeys

This section provides a summary of the key stages in the journeys through the Scheme for customers and installers (as set out by the Scheme administrator at the start of the Scheme). The purpose of the description is to provide context and a reference for the evaluation findings which follow.

2.2.1 Customer journey

The expected customer journey is illustrated in Figure 2.1 overleaf and detailed below the Figure.

Figure 2.1: Expected customer journey map



Pre-application phase

This phase of the expected customer journey begins with applicants finding out about the Scheme and gathering information from the Scheme webpage on GOV.UK. They proceed through this to an online eligibility check if they wish to do so. Next, they seek Scheme-approved installers (e.g. using SEA information) to provide quotes. With quotes received, they then complete their application, including reading and signing the Terms and Conditions for the Scheme, potentially with support and guidance from the Scheme administrator before submitting.

To proceed to the installation phase, their application must be reviewed and approved by the Scheme administrator, at which point a voucher is issued. Should an application not meet requirements, it may be rejected, or applicants may be asked for additional information. Applicants may then appeal or provide the requested information, at which point their application is reviewed again by the Scheme administrator. Additionally, a random selection of cases is chosen to be inspected. Selected applicants are contacted by an inspector and visited for an on-site review. Based on the inspector’s recommendation an approval decision will be made and any rejection may go through the appeals process.

Installation phase

Once in receipt of a voucher, applicants are free to start the installation phase. This begins with the customer providing their installer with their voucher ID and arranging a time for the installer to visit and carry out the installation. Upon completion of the installation, the applicant receives an invoice that totals all of the measures installed, including for their portion of the costs (typically, under the General part of the Scheme, one third of the total for approved measures) and any relevant information from the installer (e.g. advice on how to look after their measures, MCS certificates, etc.). Applicants then pay their installer. Finally, applicants notify the Scheme administrators of a successfully completed installation through the website, including their final cost of measures, signed declaration and indication of satisfaction with works.

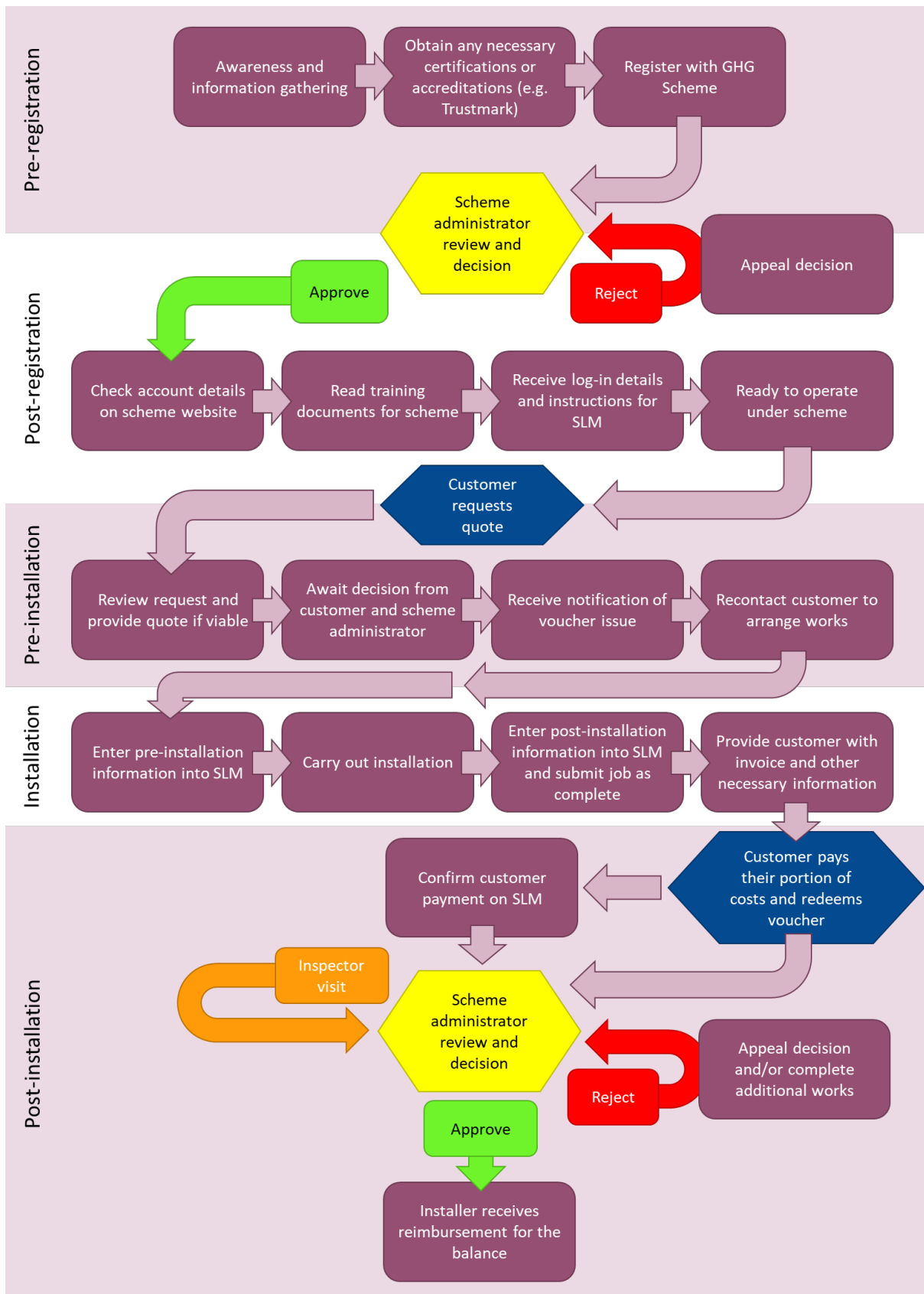
Post-installation phase

For applicants to complete their journey, a final desktop review by the Scheme administrator takes place based on information received from applicants and installers. For most applicants, where all the necessary information is provided without issue, this results in a final confirmation that their voucher has been redeemed and the installer is paid for the balance. However, in cases where the desktop review fails, applicants are notified. Following a desktop review failure, additional works may be required, or the decision may be appealed before the case is reviewed again. At this stage, an inspection or audit of the works may also take place. The results of the inspection will inform the Scheme administrator's decision to approve payment, although this may also lead to a rejection (that may be appealed) or request for additional works as above.

2.2.2 Installer journey

The expected installer journey is illustrated in Figure 2.2 overleaf and detailed below the Figure.

Figure 2.2: Expected installer journey



Pre-registration phase

The expected customer journey begins with installers finding out about the Scheme and gathering information from the Scheme webpage on GOV.UK and/or other sources (e.g. the

TrustMark website). If not already held, installers apply for and obtain relevant certifications and accreditations in order to participate in the Scheme (e.g. TrustMark, PAS, MCS, etc.). Installers then fill in an online form on the Scheme registration page, including reading and signing up to the Scheme Terms and Conditions, potentially with support and guidance from the Scheme administrator, before submitting.

To proceed to the next phase, their application must be reviewed by the Scheme administrator and the voucher issued. Should an application not meet requirements it may be rejected, and installers may choose to appeal the decision.

Post-registration phase

Following successful registration, installers are able to access their online account on the Scheme website to confirm their details and amend any inaccuracies (e.g. company details, TrustMark details, bank details, etc.). Installers are then required to read training documents for the Scheme and are reminded by email to do so. On completion of these steps, installers are provided with log-in details and instructions for using the Sightline Mobile (SLM) system and are now ready to operate under the Scheme.

Pre-installation phase

Every job under the Scheme begins with an initial customer contact, requesting a quote. Installers will review the customer's request and, if appropriate, provide a quote for the work. At this point the installer waits for the customer to conclude the steps detailed at the end of the 'pre-application phase' detailed in the customer journey section above. Once a voucher has been issued, the installer is notified and they can then recontact the applicant to arrange the works.

Installation phase

Before works begin, installers are required to enter pre-installation information into the SLM system, including photographs of the site. Installation works are then carried out and, once complete, the installer uploads the post-information information into the SLM system, including photographs, and marks the job as complete. The installer then provides the customer with any necessary information and documentation as well as a final invoice to close this phase.

Post-installation phase

The final phase begins with the applicant paying the installer for their portion of the works and redeeming the voucher online (see the customer journey above). The installer is also required to confirm receipt of the customer payment on the SLM system. For installers to complete their journey, a final desktop review by the Scheme administrator takes place, based on information received from applicants and installers. For most installers, where all the necessary information is provided without issue, this results in a final confirmation that their voucher has been redeemed and the installer is paid for the balance. However, in cases where the desktop review fails, installers are notified of this failure. Following a desktop review failure, additional works may be required, or the decision may be appealed before the case is reviewed again. At this stage, an inspection or audit of the works may also take place. The results of the

inspection will inform the Scheme administrator's decision to approve payment, although this may also lead to a rejection (that may be appealed) or request for additional works as above.

2.3 Fraud controls within the Scheme

BEIS monitors and assures that occurrences of fraud remain within fraud risk tolerance.

Multiple fraud control measures are in place to deter, prevent and detect fraud. These include:

- Pre-award, upfront checks to verify the identity and eligibility of applicants and installers;
- Pricing controls to ensure value for money of quotes compared against industry averages;
- Installers obligatorily registered with TrustMark to provide consumer protection. (TrustMark requires installers to have demonstrated competence at the measures they install, and some due diligence checking is undertaken);
- Additional compliance and quality checks on completed work, conducted prior to approval of payment through, for instance, remote and site audits or more in-depth investigator review; and
- A fraud hotline operated by the Scheme administrator is available for customers to raise concerns.

3 The experience and perspectives of applicants / potential applicants

3.1 Key findings

- A higher prevalence of households likely to be fuel poor amongst occupants, as shown in the applicant survey, suggests that the Scheme has been successful in encouraging fuel poor households to apply.
- According to Scheme data, over half (57%) of applicants applied via the low-income Scheme, which allowed applicants in receipt of eligible benefits to apply.
- The Scheme data indicates that 86% of applications were submitted by owner-occupiers. The remainder were submitted by landlords or those who applied on behalf of someone else.
- Overall, the applicant survey data suggest that most applicant households (86%) were driven to participate by a desire to save money on their energy bills.
- Applicants cited the cost of installations and a concern about whether the measure would save them money in the long term (payback period) as the primary barriers that prevented them from having measures installed before the Scheme.
- Applicants interviewed through the qualitative research praised the concept of the Scheme, seeing value in the offer of subsidies to improve people's homes, reduce their energy bills and minimise energy use.
- Opinions around the Scheme's delivery were more mixed. The survey found a roughly even split between applicants reporting overall satisfaction and dissatisfaction with the Scheme. Qualitative data indicated that many applicants had experienced significant difficulties pursuing their application for the voucher following their initial engagement with the Scheme.
- The survey found that most applicants whose installations were complete by the time of the survey were satisfied with their new installation; a finding reflected in the qualitative research.
- Very few applicants expressed concern through the qualitative research about arranging an installation during the Covid-19 pandemic. The voucher redemption process was easy for most applicants.
- Indeed, most applicants stated that their experience had made them more likely to consider energy efficiency or low carbon heating improvements in future.

3.2 The profile of applicants

The following analysis of the Scheme data describe the profile of the 113,739 applicants to the Scheme as of 6th August 2021:

Household income levels: According to Scheme data, over half (57%) of all applicants applied for vouchers through the low-income Scheme, with the remainder applying under the main Scheme.¹⁵ This may suggest that the GHGVS has been effective at encouraging applications (and take up of installations) by low-income households. A large proportion of survey respondents (87%) describing themselves as in receipt of benefits applied to the Scheme through the lower-income Scheme.

Housing type: According to Scheme data, 93% of applications were for houses; 5% for flats or maisonettes; and 2% for park homes.

Home ownership: According to Scheme data, 86% of applicants were homeowner-occupiers vs. landlords (10%) or individuals applying on behalf of the owner of a property (3%). Based on the qualitative interviews conducted by the evaluation team, the latter group appears to have been made up mainly of people applying on behalf of family members or of guardians / carers. Very few tenants applied for the Scheme on behalf of the owner of the property, i.e. their landlord. This evaluation's interviews with landlords provide some further insights into the low level of engagement of tenants with the Scheme:

Empty properties: The majority of the landlords interviewed reported that they applied for the Scheme when the property was empty and that they were looking to carry out the retrofit works to rent in the near future.

Tenants not involved in retrofitting decisions: Landlords consulted had made decisions as to retrofitting without involving tenants. People renting the properties were kept up to date about any work conducted but did not apply nor take the decision to participate into the Scheme. Most landlords felt it was right for them to decide about these works, because they were contributing financially.

A recent report from Climate Exchange¹⁶ provides insight into some of the reasons for low levels of retrofitting amongst tenants:

A split incentive: Landlords are responsible for paying for, and arranging, upgrades to their properties, while it is the tenants who are most likely to benefit from the upgrades (through increased comfort, bill savings, etc.). In addition, tenants are generally forbidden from making home improvements without the landlord's consent. Therefore, without an engaged and incentivised landlord, tenants may be blocked from arranging

¹⁵ The low-income scheme did not assess household income but used receipt of specific benefits as a proxy. This included disability benefits which are not necessarily means tested.

¹⁶ [N. Kerr, M. Winskel: "Private rental sector and home energy retrofit investment". July 2018.](#)

energy efficiency works, especially where landlords operate as a small business with a focus on return on investment.

Young and transient occupiers: Referring to the relatively low average age of tenants and the short term of the tenancies (lasting less than two years),¹⁷ these two aspects tend to disincentivise investment in energy efficiency measures.

However, overall, the experience and appetite for retrofitting amongst private tenants is under-researched. This evaluation, in fact, has only been able to speak to one tenant¹⁸ and there is little existing literature on how tenants interact with retrofitting.

Fuel poverty status: A higher prevalence of households likely to be fuel poor amongst occupants in the applicant survey suggests that the Scheme has been successful in encouraging fuel poor households to apply: 42% of occupier applicants were assessed as fuel poor, compared with 13% across the country as a whole. The low-income Scheme includes a high proportion of households assessed as likely to be in fuel poverty (54% vs. 25% on the main Scheme). Overall, 75% of those assessed as likely to be in fuel poverty applied for vouchers through the low-income Scheme, compared with 36% who were not likely to be in fuel poverty (and 60% for whom an assessment could not be made).

3.3 Motivations for participation

Applicants consulted through qualitative interviews and the applicant survey stated various motivations for participating in the Scheme. The motivations varied somewhat by applicant profile, but most applicants cited two or more reasons for their application as described in the following sections.

3.3.1 Occupiers (non-landlords)¹⁹

In the survey, 86% of occupiers cited a desire to save money on energy bills as a reason for their interest in the Scheme.²⁰ Seven in ten (70%) stated an interest in making the property warmer or more comfortable. A majority (61%) also noted a desire to reduce energy for environmental reasons. Just under half (47%) stated that they wished to 'bring [their] property up to modern standards', with about two fifths (41%) stating that they were motivated by the installation being free / at a reduced price. A desire to increase their property's value and a

¹⁷ Average time for Scotland for the 16-34 years old.

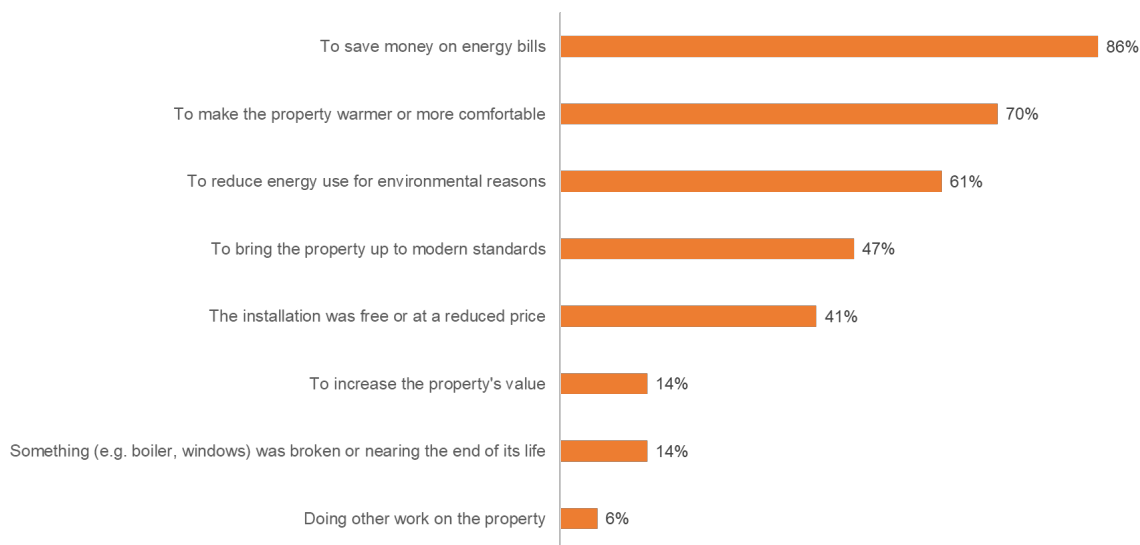
¹⁸ One tenant was interviewed during the first wave of qualitative fieldwork in March 2021 prior to the cancellation of the scheme. The evaluation team concluded that this did not represent a high enough figure to draw any reliable conclusions.

¹⁹ The term 'occupiers' in this report refers to those who applied for a voucher in the property in which they live. Almost all 'occupiers' (99%) who completed the household survey owned their home (51% had bought it with the help of a mortgage / loan, 47% owned it outright, 1% had shared ownership). 'Occupiers' also includes tenants who are renting the property. The number of tenants is too low (five respondents, representing <1% of respondents) for analysis to be conducted for this group separately.

²⁰ Responses to the multi-code question: 'What were your reasons for applying to have the energy efficient or heating improvement(s) installed to this property?'

desire to replace a broken or ageing installation (e.g. boiler, windows) were each cited as a factor by 14% of occupiers.

Figure 3.1: Reasons why occupiers were interested in the Scheme



Question D3: What were your household's reasons for being interested in the Green Homes Grant Voucher Scheme?
 Source: Green Homes Grant Voucher Scheme Applicant Survey.
 Base: All who applied for voucher in own home (3365)
 Note: Only responses given by 5% or more shown in chart, 'Don't know' not shown

Occupiers on the low-income Scheme (88%) were slightly more likely to mention reducing energy bills as a motivation than those on the main Scheme (83%). They were also slightly less likely to mention a desire to reduce energy use for environmental reasons than those on the main Scheme (56% on low-income Scheme vs. 68%), or to bring the property up to modern standards than those on the main Scheme (44% on low-income Scheme vs. 52% on main Scheme).

Qualitative interviews with occupiers unpicked motivations a little more and, in these conversations, 'doing their part to help the environment' was a more prominent motivation. These occupiers spoke about the need to reduce domestic energy use in light of the climate crisis and expressed enthusiasm about being enabled through the Scheme to do this. They also cited financial motivations, with some saying that the Scheme permitted them to arrange an installation they would not otherwise have been able to afford, and others explaining that the Scheme permitted them to reduce the cost of a home improvement which they may have installed anyway. The main financial benefit of the Scheme was felt to be the potential for post-installation energy cost savings.

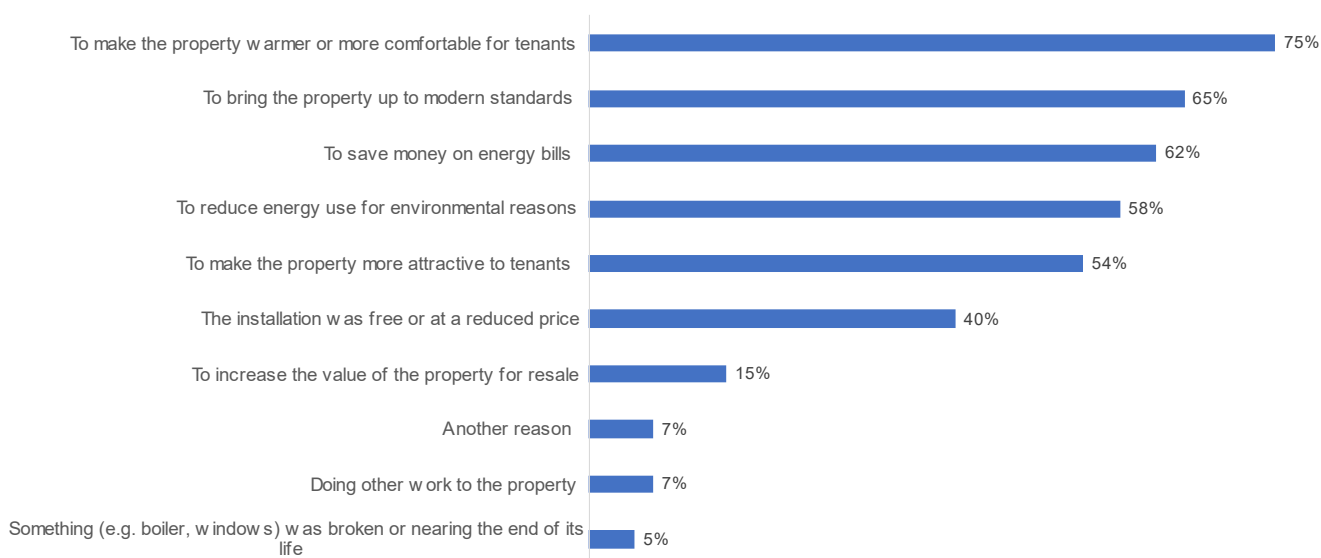
3.3.2 Landlords

The figures for landlords demonstrate that this group had broadly equivalent motivations to occupiers. Making the property warmer or more comfortable for tenants was the most frequently mentioned motivation among this group (mentioned by 75%). Around two thirds (65%) mentioned a desire to bring the property up to modern standards: higher than the 47% of occupiers who said this. Saving money on energy bills was also stated as a motivation by most landlords (62%), although the proportion is lower than for occupiers (86%). A majority

stated reducing energy use for environmental reasons as a motivation, similar to occupiers (58% landlords, 61% occupiers). Just over half (54%) of landlords stated that they had the installation(s) to make the property more attractive to tenants.

Landlords and occupiers were equally likely to say they were interested in GHGVs.

Figure 3.2: Reasons why landlords applied to have the energy efficiency or heating improvement(s) installed in the property



Question D4: What were your reasons for applying to have the energy efficient or heating improvement(s) installed to the property?
 Source: Green Homes Grant Voucher Scheme Applicant survey
 Base: All landlords (177)
 Note: Only responses given by 5% or more shown in chart, 'Don't know' not shown

3.3.3 Further information on motivations

The research conducted with applicants indicates that the motivations for application were in most cases a combination of financial and environmental considerations. When asked about their reasons for applying to the Scheme, many applicants in the qualitative research spoke of the financial, comfort and environmental benefits of including the measure, a tendency reflected in the quantitative data as noted above. Applicants who were already having (or arranging to have) works undertaken in their homes at the time of application tended to cite an exclusively or primarily financial motivation for their application, elaborating that there would be no harm in applying for the grant Scheme given they were already dealing with the hassle of home improvements. Taken together, these findings would perhaps indicate that for many would-be applicants, purely financial considerations do not alone constitute an adequate driver for applications when considered against concerns about hassle or disruption in the home.

The findings from qualitative interviews with applicants also suggest that many applicants looked into the Scheme without much knowledge of the available primary measures, but were motivated to apply by one of the following: the need to replace a faulty / broken item (e.g. a boiler); a general desire to improve their home; or an interest in a secondary measure (e.g. door / window replacement). Many applicants also needed to conduct research external to the

Scheme website to select an appropriate primary measure. This may indicate that lack of knowledge about primary measures may be a barrier to engagement with the Scheme.

3.3.4 Barriers to households installing measures outside of / prior to the Scheme

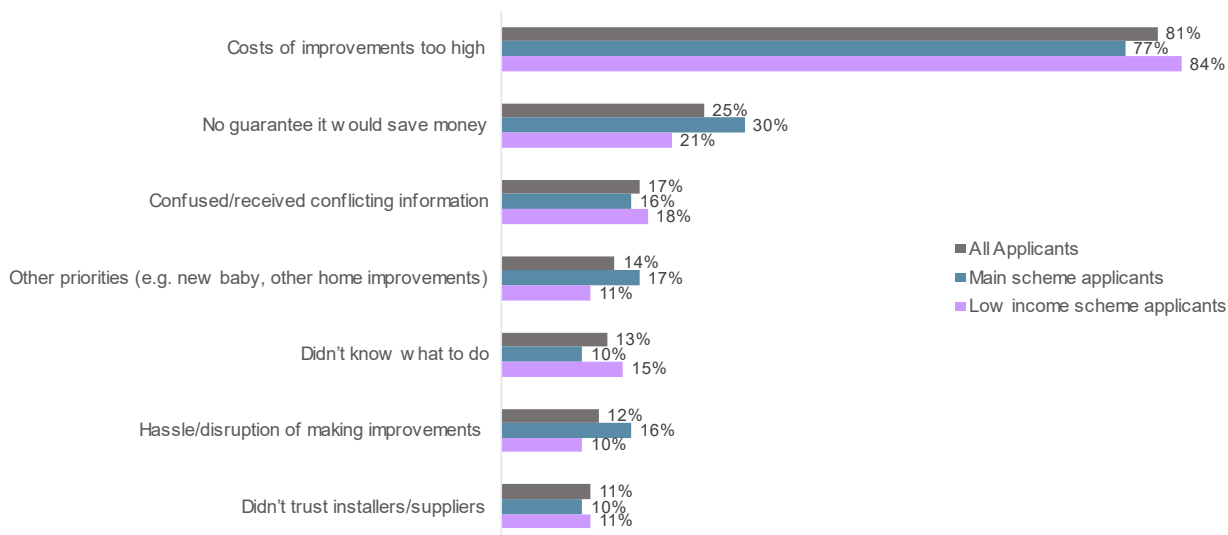
Applicants were asked in the survey to note whether there were any measures that they had considered installing prior to the Scheme but had at that time decided not to install them²¹. A total of 89% of occupiers and 87% of landlords said there was at least one measure they had considered installing prior to the Scheme, suggesting that there was significant latent demand for measures at that time. When asked what had prevented them from making these improvements, the most common reason was the cost of improvements (mentioned by 81% of those who had considered improvements before the Scheme but had not completed them). A quarter (25%) said they had not installed at that time because there was no guarantee the measure(s) would save money, and 17% said they had not installed at that time because they were confused / received conflicting information on the topic (17%).

In slight contrast to the above-presented data, this does suggest that a major driver of participation in the Scheme was the affordability it offered to applicants.

This suggests that the Scheme was effective as a lever to homeowner behaviour.

²¹ The full question can be found in the technical annex (which will include the questionnaires and will be submitted as a separate document).

Figure 3.3: Factors that prevented applicants from having measures installed before the Scheme



Question C7: What, if anything, prevented your household from making energy efficient or heating improvements to the property at the time (before the scheme)?
 Source: Green Homes Grant Voucher Scheme Applicant survey
 Base: All who had considered making a home improvement prior to the scheme but had not completed it: Main scheme applicants (752), Low income scheme applicants (1450)
 Note: Only responses given by 5% or more shown in chart, 'Don't know' not shown

Most applicants said they had not had any improvements made to the relevant property through other government or local authority Schemes prior to GHGVs: 60% said they were sure they had not, and a further 24% did not know. This suggests that the Scheme has been successful in engaging those who had not been reached by previous Schemes.

3.4 Overall experience of and views of the Scheme

From the applicant qualitative interviews, there was near-universal praise for the Scheme as a concept / by design. Participants considered that such a Scheme would bring benefits to householders in improving the quality of their homes, reducing future heating costs, and reducing the cost of improvements which some might otherwise not be able to afford. There was also a feeling that government subsidies for home improvements could play an important role in decreasing carbon emissions and reducing environmental impact.²² Non-applicants who had heard of the Scheme concurred with this positive view.

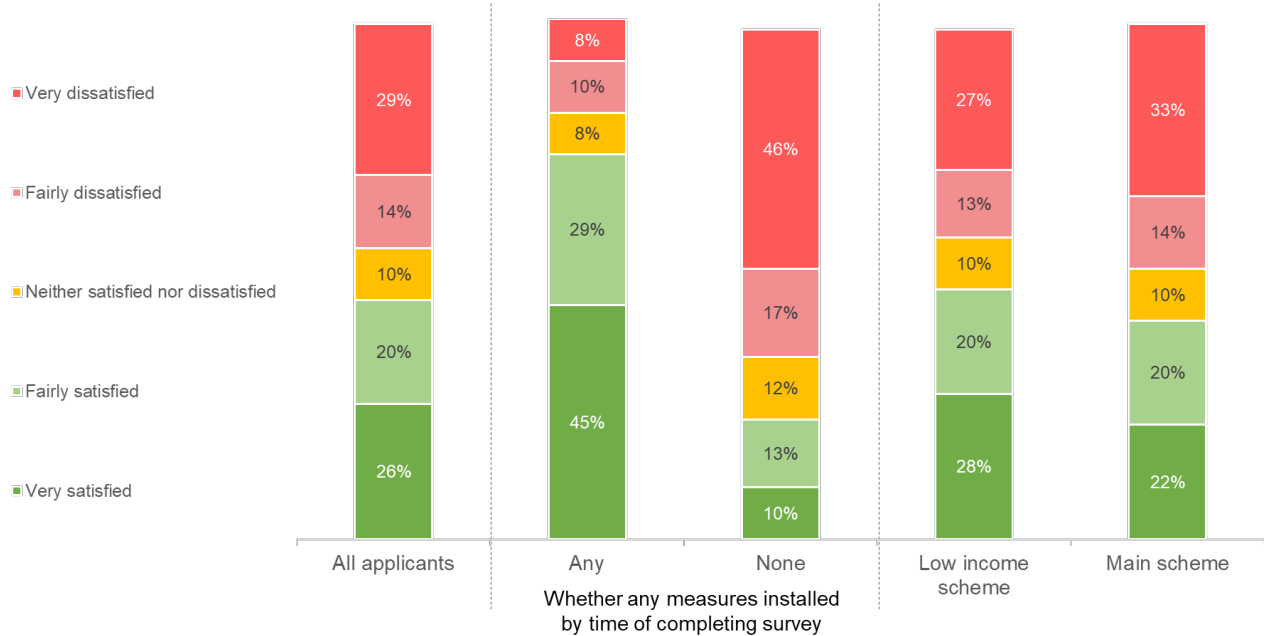
Amongst applicants, views of how the Scheme was delivered were somewhat less positive than views expressed towards the Scheme as a concept.²³ As part of the qualitative interviews, applicants expressed broadly negative views towards the management and delivery of the Scheme.

²² This finding derives from interviewee responses to the question: 'What were your thoughts about the scheme when you first heard of it?'

²³ How easy or difficult was it to apply for a voucher under the scheme?

In the survey, when asked to consider all their experiences with the Scheme, experiences were polarised: around half (46%) said they were satisfied including 26% who were very satisfied, and similar proportions were dissatisfied (43%) and very dissatisfied (29%).

Figure 3.4: Overall degree of satisfaction / dissatisfaction with the Scheme



Question I1: Taking all your experiences into account, overall, how satisfied or dissatisfied are you with the Green Homes Grant Voucher Scheme?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All applicants (3606), Any measures installed (1609), no measures installed (1997), Low income scheme applicants (1693), main scheme applicants (1913),
 Note: Don't know not shown

Degree of satisfaction correlated closely with whether or not the applicant had had any measures installed by the time of survey. Three quarters (74%) of those who had had at least one improvement installed said they were satisfied, with only one fifth (18%) dissatisfied, compared with 24% satisfied amongst those who had not had any measures installed and 63% dissatisfied. The qualitative research indicates that the reasons for the overall relatively low levels of satisfaction were due to negative experiences encountered during the application process, which are explored in detail below.

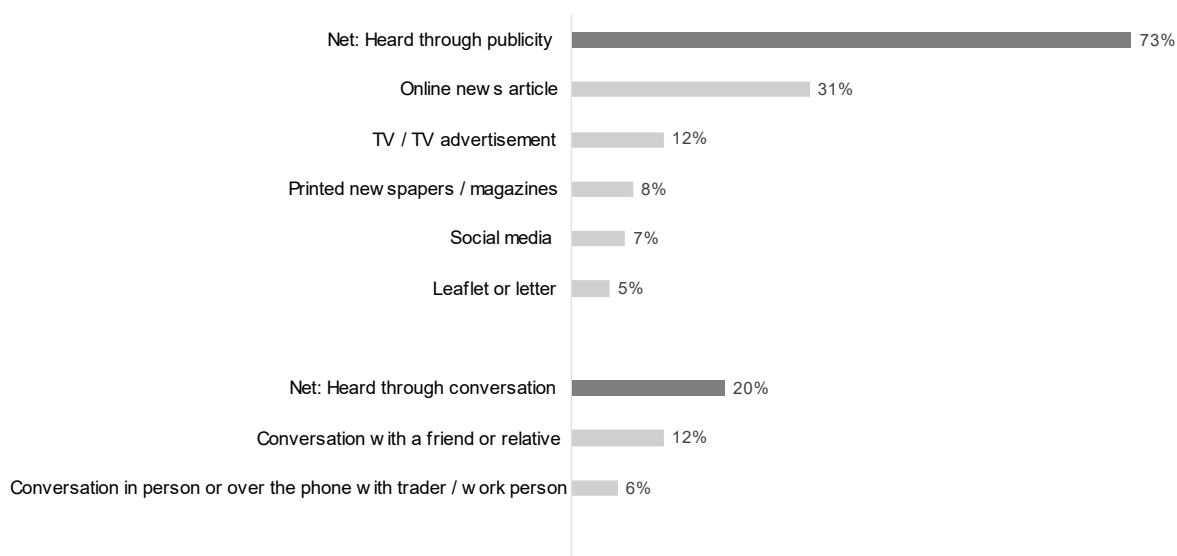
In addition, applicants through the low-income Scheme were more likely to be satisfied (48%) than those through the main Scheme (42%).

3.5 Initial awareness of and engagement with the Scheme

3.5.1 The views and experiences of applicants

Most applicants (73%) had first heard about the GHGVS through Scheme publicity: with 31% finding out through an online news article, and 12% through TV. After publicity, word of mouth was the second most common way of finding out about the Scheme, with a fifth of applicants (20%) citing friends or relatives as the most common source (12%) and 6% finding out from an installer/tradesperson or someone working in the industry.

Figure 3.5: How applicants first found out about the Scheme

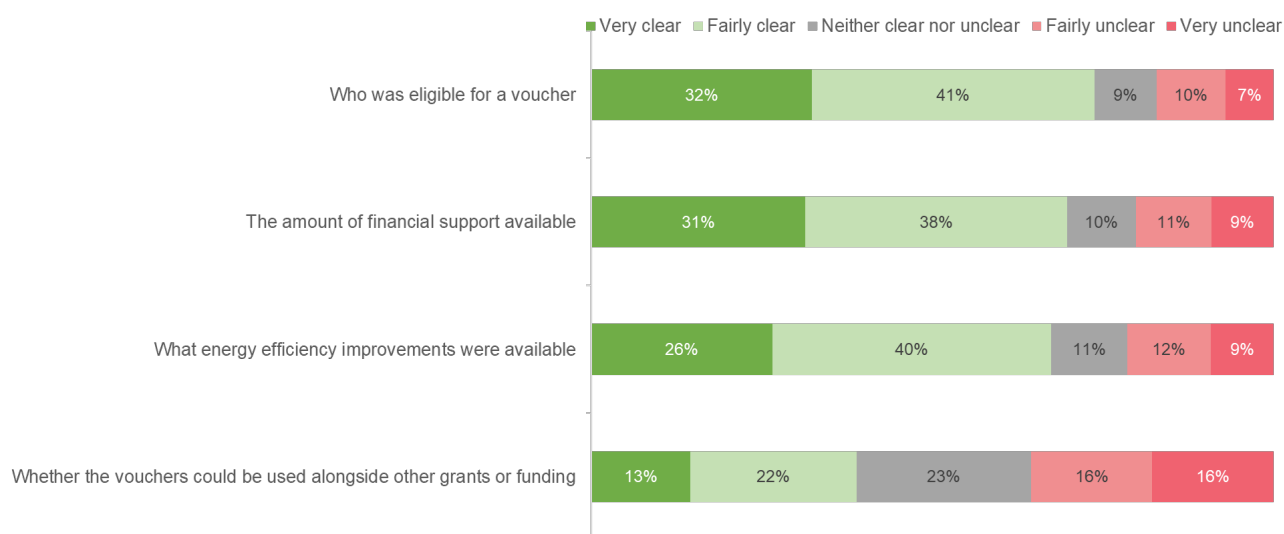


Question D1: How did your household first find out about the Green Homes Grant Voucher Scheme?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All applicants (3606)
 Note: Only responses given by 5% or more shown in chart, 'Don't know' not shown

Participants in qualitative interviews elaborated that they had initially heard of the Scheme around the time of, or shortly following, its announcement in Summer 2020. A few explicitly mentioned seeing the Scheme’s initial announcement on the news.

Most applicants participating in the qualitative interviews felt that the publicity around the Scheme was adequate and noted that it was quite widely publicised, though a small number felt that despite large publicity around the Scheme, not enough information was initially provided around the Scheme’s announcement regarding the practicalities of application or eligibility for the low-income Scheme. These views were mirrored in the responses given by participants to the applicant survey: two thirds or more felt that the information was clear on eligibility (73%), the amount of financial support available (69%) and which improvements were available (66%). However, information on the interaction between Green Homes Grant Vouchers and other grants or funding was felt to be less clear (see Figure 3.6 overleaf).

Figure 3.6: Perceived clarity of information on various aspects of the Scheme



Question D2: How clear or unclear did you find the information on the following aspects of the Green Homes Grant Voucher Scheme?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All applicants (3606)
 Note: Don't know not shown

3.5.2 The views and experiences of non-applicants

Amongst non-applicants – defined as people who were eligible for the GHGVs who did not apply - not all had heard of the Scheme prior to taking part in the qualitative interviews. Amongst those who were aware, the main sources used to find information about the Scheme were similar to those used by applicants. Others were either unaware of the Scheme or confused it with others that also focus on energy efficiency and reducing carbon use.

Views of the concept and aims of the Scheme were similarly positive amongst non-applicants. They considered it an opportunity to make older properties more energy efficient, save money on heating bills and protect the environment. Non-applicants who said in interview that they had an immediate or significant need to install a home improvement measure were particularly receptive to the Scheme.

Reasons given by non-applicants for not participating in the Scheme mirrored the reasons given by applicants for not making improvements prior to the GHGVs (see Figure 3.3). Financial barriers were commonly mentioned, with non-applicants reflecting that the primary measures included in the Scheme were not currently financial priorities for them. Uncertainty regarding the return on investment for primary measures was often mentioned, particularly in relation to low carbon heating systems: the financial information provided on the SEA website typically confirmed the view that low carbon heating measures were costly and would take a long time to return on investment. This was of particular concern for those who did not plan to stay in their current home for long.

Non-applicants expressed some confusion over the figures presented on the SEA website,²⁴ querying whether the cost of measures shown included or excluded the voucher amount the

²⁴ The website included a tool which would generate a cost estimate for installations inputted. This tool is shown in the stimulus material 4b in Annex 7 of this Report.

individual would receive. They felt that clarity on this point would help them further understand the financial investment required. Questions and concerns regarding the Scheme process also emerged as barriers to application, generating uncertainty in applying to the Scheme. Some participants mistakenly believed themselves to be ineligible (thinking it was only for those on low-income) and those who did not know which improvement would be appropriate for their home.

One barrier which emerged for some non-applicants did not apply to applicants. For some non-applicants there was a lack of perceived need for the Scheme, especially for those who lived in new-build homes or who had recently had their boilers replaced. The latter also expressed reluctance to invest in replacing something installed in the last few years.

For some non-applicants, the level of disruption involved in installation was a concern. Identifying appropriate measures emerged as a key concern for participants who felt they lacked knowledge and information about the primary measures available - particularly low carbon heating systems. Some reflected that they had had measures such as loft insulation installed previously and were unsure whether updated insulation might be available and appropriate for their home. Participants felt that, without more information about the measures available, they would be unable to identify which might be useful for their home.

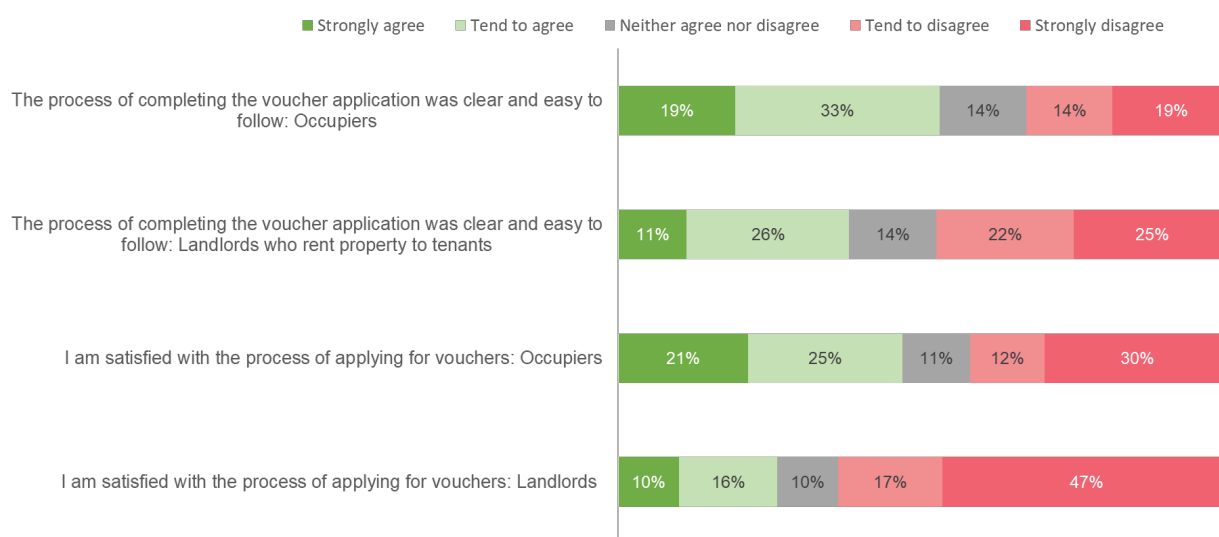
3.6 Application process

Applicants' levels of satisfaction regarding the application process were similar to their levels of satisfaction with the Scheme overall. When asked whether they were satisfied with the process of applying for a voucher on the Scheme, survey participants were split evenly between those who agreed with the statement (44%) and those who disagreed (43%). Landlords were significantly less happy with the application process than occupiers, with 63% expressing dissatisfaction with the process of applying to a voucher on the Scheme, compared to 42% of occupiers. The qualitative research indicates that this may be related to greater scope for administrative issues for landlords since they were required to submit a separate application for each property for which they wished to apply for a voucher. Some landlords mentioned that their application was delayed by issues with proving ownership of the relevant property or by administrative complications arising from the fact that their home address was not the address for which the application was made.

There was a slight difference in perception of the application process between those on the main Scheme and those on the low-income Scheme. Among low-income Scheme applicants, 46% were satisfied with the process and 40% dissatisfied, compared with figures of 42% satisfied and 47% dissatisfied among main Scheme applicants.

When asked specifically about whether the process of completing the voucher application form was clear and easy to follow, half of all applicants (50%) agreed that it was, with 34% disagreeing. Once again, occupiers were more positive about the process than landlords, being more likely to agree that the process was clear and easy to follow (52% occupiers, 37% landlords).

Figure 3.7: Level of agreement with statements concerning the process of applying for a voucher



Question F2: To what extent do you agree or disagree with the following statements?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: Occupiers (3365), Landlords (177)
 Note: Don't know not shown

Participants in the qualitative research with applicants found the initial online application process clear and straightforward, with few experiencing difficulties at this stage, though there was occasional confusion about whether the voucher would subsequently be issued before or after submission of quotes from installers. A small number of participants suggested that it may have been useful to have the option of completing the application offline, whether by telephone or by written form. This suggests that these participants were not aware of the ‘digital assist’ option to offer postal and telephone routes to application. Those who were asked for further information to support their application following initial submission suggested that this information could have been requested during the initial stage of online submission so as not to delay the application process.

The NAO Report concluded that the Scheme’s requirements were complicated and difficult for the homeowner and installers to get right first time leading to homeowners and installers being asked for further information, which took time and caused frustration. By 6 August 2021, of those voucher applications where a decision had been reached, 52% had been either withdrawn by the homeowner or rejected by the administrator after addressing outstanding queries with applicants. Anecdotally, manufacturers and other supply chain actors interviewed for the evaluation reported that applicants they had spoken to had found the application process complex and lengthy. However, this claim is not corroborated by the evidence collected through our research with applicants, who generally reported they had managed to navigate any complexities associated with the application process.

During the subsequent process of securing quotes and submitting the application, participants in qualitative interviews encountered numerous practical and administrative issues, as described below.

Difficulties finding installers: In the survey, more than half (55%) of applicants reported that it was either fairly or very difficult to find installers to provide quotes for the desired energy efficient or low carbon heat improvements. Landlords were more likely than average to find it difficult to find installers (63% vs. 54% of occupiers). Applicants participating in the qualitative interviews reported similar challenges. Some explained that, on searching for installers on the Scheme website, there appeared to be a general lack of installers for their selected measure in their region. On calling available installers, participants frequently reported having to speak to several installers before finding one who was available to provide a quote. Other installers were reported as being unresponsive to phone calls / emails or proved unwilling to provide a quote when contacted. Participants reported finding installers who were fully booked due to high demand from the Scheme or who explained that they had decided not to carry out installations on the Scheme because of concerns about delays in payment or problems with organisation of the Scheme.

Delays to administrators' issuance of vouchers: Further issues were encountered by applicants following submission of quotes, the primary one being perceived long delays (sometimes of several months) before hearing back from Scheme administrators. Those who applied in the earlier months of the Scheme reported longer delays than those who applied in December or later. Several had not had confirmation of their voucher by the time of interview (conducted in March – May 2021) despite having applied several months earlier. This was of particular concern to applicants who were already arranging building works at their home at the time of application, as these applicants had anticipated being able to have the measure installed around the same time as other works. For example, one applicant was having to contemplate delaying other building works which could not be completed until after installation of the new air source heat pump. Another applicant wanted the installation of their new solar thermal system to coincide with other roofing works, but delays obliged them to pay for scaffolding to remain on the house for longer than anticipated, while another could not move into their newly purchased home because delays to the voucher for their air source heat pump meant there was no heating in the new home.

The following table shows the percentage of respondents reporting that their voucher had still not been issued by the time the survey was conducted (July 2021).

Table 3.1: Respondents reporting unissued vouchers and measure type

Measure	Base (Total number of survey respondents who had applied for each measure)	% of respondents reporting that the Green Homes Grant Voucher has not yet been issued (at time of survey- July 2021)
Heating controls	255	14%
Cavity wall insulation	443	10%
External solid wall insulation	691	11%
Flat roof insulation	133	12%
Internal solid wall insulation	92	15%
Loft insulation	870	11%
Park home insulation	150	4%
Pitched roof insulation	298	7%
Room in roof insulation	120	13%
Biomass boiler	59	17%
Solar thermal	497	6%
Double triple glazing	192	25%
Energy efficient replacement doors	311	17%
Draught proofing	35	23%
Heat pumps (air source, ground and hybrid)	504	12%

Measure	Base (Total number of survey respondents who had applied for each measure)	% of respondents reporting that the Green Homes Grant Voucher has not yet been issued (at time of survey- July 2021)
Under floor insulation (solid floor and suspended floor)	247	9%

Note: Results not shown for Hot water tank insulation, Hot water tank thermostats or Secondary glazing due to low bases. Question: What is the current status of the application for the following improvements at this property?

Information provision and the appeal processes: Applicants in qualitative interviews whose application was not accepted on first submission tended to be dissatisfied with the process of appeals that followed. An initial issue mentioned by these applicants was that the Scheme administrators did not get in touch to inform them that their application had been rejected / would require amendments. Rather, they became aware of this only on calling the Scheme administrators to ask about their application’s progress. Other applicants who went through an appeals process reported having been asked to provide further information (e.g. proof of home ownership, personal ID); but on having subsequently provided it, they were then asked one or more further times to provide the same information, and on subsequently contacting the Scheme administrators to check on the application’s progress, found that the administrators were unable to find record of the earlier communications. One applicant, whose application was rejected because of using an unregistered installer, emailed the administrators to point out that the installer was in fact registered with the Scheme (and TrustMark accredited) but had not heard back from the Scheme by the time of interview, two months after sending the email.

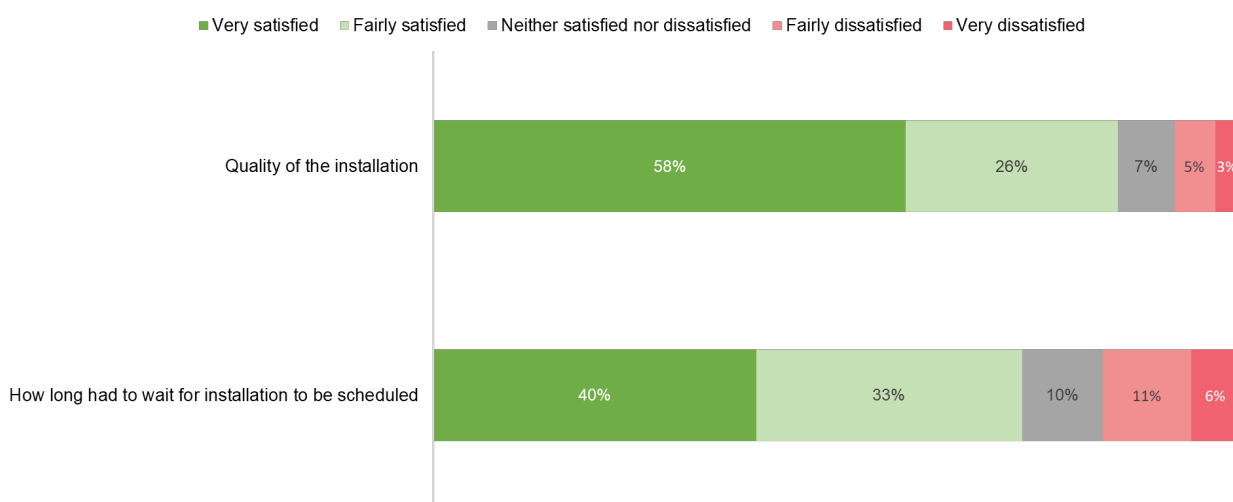
Overall communications with the Scheme administrator: Applicants expressed dissatisfaction with the communications they had with Scheme administrators when contacting them to query their application’s progress. They mentioned waiting longer than the promised response time to receive responses to their emails and found phone operators unable to respond adequately to their queries. Some additionally recalled having to contact the Scheme on a large number of occasions before their queries / issues were resolved. For example, one applicant interviewed for this evaluation reported a lengthy exchange with the Scheme’s administrators following receipt of the voucher as the applicant had noticed an error in the Scheme administrators’ calculation of VAT on the quote. The issue was ultimately resolved but the applicant spoke negatively of the length of time and number of communications required.

3.7 Experience of installations

As noted above, 44% of applicants who took part in the survey had had at least one installation completed by the time of the survey. Of these participants, most were satisfied both with the process of the installation and subsequently with the measure itself. Three quarters (72%) of those with at least one completed installation stated that they were satisfied with the length of

time they had to wait for the installation to be scheduled, with 18% expressing dissatisfaction. A higher proportion (84%) said they were satisfied with the quality of the installation, with 58% stating that they were very satisfied and only 8% dissatisfied. This high level of satisfaction was broadly the same across the various measures offered on the Scheme.

Figure 3.8: Level of satisfaction with the quality of installation and time taken for it to be scheduled



Question H1: Thinking about having the energy efficient or heating improvement(s) installed, how satisfied were you with the following?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All applicants who have had at least one installation completed (1609)
 Note: Don't know not shown

Participants in qualitative interviews were also largely satisfied with the length of time taken for the installation to be complete, with some observing that at the time of installation they had little idea of how long such works ordinarily take. Amongst those whose installation took longer than expected, some were not bothered by the extra time taken.

All qualitative research participants whose installations were complete by the time of interview were overall happy with their installation. A few participants made the caveat that their installation had not been in place long enough to assess its utility, whilst one applicant had hoped that their new solar thermal system would be installed with a smart meter to allow its impact to be measured. Some minor issues were reported (e.g. length of installer guarantee, installers not completing works exactly as specified, noise generated by the measure), but there were no consistent concerns raised.

The Covid-19 pandemic did not prove to be a significant concern for applicants interviewed in the qualitative element of the research. Considering government recommendations to remain within one's local area, a few participants in the qualitative research for this evaluation had been careful only to contact installers based locally due to concerns having installers travel a long distance to reach their homes. Those whose installations were complete explained that installers took care to wear masks and keep their distance from householders on carrying out installations, with few exceptions. Those who did express concerns stated that they felt the installation was important enough for them to take the risk, with one applicant who applied for

an air source heat pump reasoning that their faulty boiler would have to be replaced promptly in any case, whether on or off the Scheme. One participant saw the pandemic as having provided an excellent opportunity to have their loft insulation replaced, as restrictions on leaving the home gave their family an opportunity to spend time clearing the loft in advance of an installation. Amongst those participating in the survey who, at that time, were experiencing delays in having their measure installed, 10% stated that the delays were due to Covid-19 / the associated social distancing rules. Amongst the survey participants considering no longer proceeding with a requested installation, 4% stated that this was due to difficulties associated with social distancing / Covid-19.²⁵

3.8 Voucher redemption and close-out

Most participants who had redeemed their voucher by the time of the survey found the process of voucher redemption straightforward. Four fifths (82%) of applicants reported finding the process fairly or very easy, with one tenth (9%) reporting it as fairly or very difficult. These findings were reflected in the qualitative research, in which applicants reported the process of voucher redemption to have been simple to complete. Following receipt of the invoice from the installer, applicants generally completed both their part of the payment (where applicable) and the voucher redemption process promptly, typically within a few days. However, in at least one qualitative interview, the applicant did express some distress that their installer had not yet been paid through the voucher Scheme and had been calling them to ask for news on progress on a regular basis. They were concerned of the risk that the installer could remove the materials applied for insulation or demand the payment due through the voucher from the applicant, though the evaluation did not find any evidence of this occurring.

3.9 Next steps for applicants – their views on future Schemes

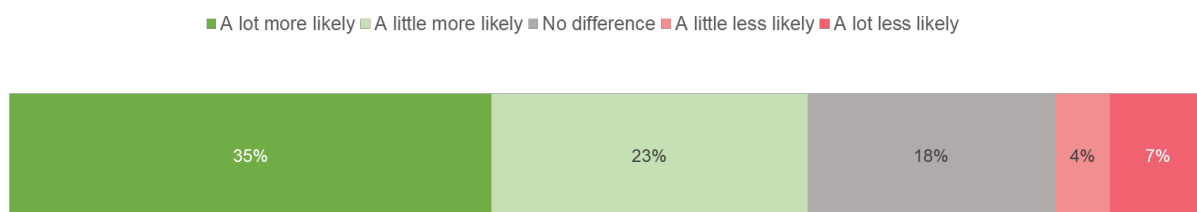
As part of the qualitative research, applicants interviewed after the announcement of the Scheme's closure in March 2021 were disappointed to learn of its closure. Whilst those who had faced problems during their application said they were unsurprised by the Scheme's closure considering the issues they had personally encountered, the applicants interviewed were united in feeling that the Scheme's abrupt closure constituted a missed opportunity to improve heating and insulation in people's homes. There was a hopefulness among many participants that the government might open a similar Scheme in future but with better management. A small number of applicants who had intended for the measure's installation to coincide with other home improvement works stated that they would not take advantage of a future Scheme because of the financial and / or logistic impact of delays to their installations.

²⁵ G4. Why are you / the people who live at the property considering not proceeding with the installation of this measure? The feedback on this question was diverse, but the most common reasons given for considering to cancel an installation were: the chosen installer no longer being available (12%), the process of arranging the installation being difficult (16%), the financial saving not being as high as hoped (13%), a change in financial circumstances meaning they were no longer able to afford the installation, and perceived disruption associated with the installation (8%).

These views were reflected in the quantitative data. When asked whether their experience had made them more or less likely to consider improvements in future, more than half (58%) stated that they were more likely to do so, including 35% who said they were a lot more likely. One in ten (11%) described themselves as less likely.

Experience of the Scheme seems to have affected participants' perceived onward behaviour. Amongst those who had completed an installation of at least one measure at the time of the survey, 78% said that they would be likely to consider future energy efficient or heating improvements compared to only 41% who had had no measure installed. Amongst those reporting overall satisfaction with the Scheme in the survey, 87% responded that they would be more likely to consider other energy efficient or heating measures vs. 27% of those dissatisfied with the Scheme.

Figure 3.9: Likelihood of considering other energy efficient or heating improvements in future



Question I2: As a result of having energy efficient or heating improvements installed, would you say you are more or less likely to consider other energy efficient or heating improvements in the future?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All applicants (3606)

3.10 Chapter summary and next steps for the evaluation

This Chapter described the views and experiences of applicants (and non-applicants) to the GHGVS. It described the profile of applicants, their motivations for participation (drawing also on the commentary and views of 18 non-applicants interviewed qualitatively in early 2020), their overall views on the Scheme, and the processes through which they went through in participating (initial awareness, engagement, application, installations).

The outcome evaluation of the GHGVS will cover in greater detail:

- Applicants' experiences of installations once all are completed post-December-2021.
- Applicants' experience of living in their home post-installation (i.e. whether it is warmer and cheaper for energy and their views on quality having lived with the installation for a few months).
- Whether there was a difference in the proportion of installations completed on the low-income vs main Scheme.
- The extent to which the Scheme has stimulated any follow-on energy efficient behaviour / installation of other measures outside of the Scheme.

- Applicants' ongoing views of the Scheme and other (potential future) government energy efficiency / low carbon heating Schemes.

4 Installations and measures

This Chapter sets out information on applications received, vouchers issued, and installations completed drawing upon Scheme data and findings from the applicant survey. As part of this analysis, it also provides best estimates of the numbers and types of measures to be installed as part of the Scheme. The analysis of installations and measures is based on Scheme data from early August 2021. The Chapter also provides emerging findings on the quality of installations and fraud and gaming, as well as costs. The former draws upon qualitative and quantitative evidence collected from applicants, installers, and auditors, whilst the latter (costs) draws upon Scheme data

4.1 Key findings

- The number of applications for the Scheme was considerably lower than initially anticipated – with only 113,739 households applying for measures against the ~600,000²⁶ for which there was funding).
- By early August 2021, vouchers had been issued for 46% of all applications submitted.²⁷ A small backlog of voucher applications was still being processed (these were cleared before the end of 2021). These equated to 6% of all vouchers issued.
- Vouchers for primary measures were considerably more likely than secondary measures to have completed installation: vouchers for low carbon heat measures were less likely to have completed installation than vouchers for insulation measure.
- The Scheme has stimulated demand for the installation of measures (or additional measures) for households/landlords, in particular for those applying through the low-income Scheme.
- The majority (58%) of those who had completed the installation of any measures said they would be more likely to consider other future measures, including 35% who said they would be a lot more likely.
- Evidence from across the evaluation suggests that the quality of installations under the Scheme is typically of a high standard, driven by the requirements of the Scheme.
- Applicants raised potential issues about installer wrongdoing and installers overcharging. In the case of the latter this may have been – in at least some cases – due to legitimate reasons for installers charging more under the Scheme than simply profiteering.

²⁶ See the September 2021 National Audit Office (NAO) Report for published figures on original estimates and budgets for applications - <https://www.nao.org.uk/wp-content/uploads/2021/09/Green-Homes-Grant-Voucher-Scheme.pdf>

²⁷ The number of vouchers issued figures exclude any vouchers which had been withdrawn or rejected by 5th August 2021.

- Costs analysis for this evaluation has found that measures tend to be slightly higher than the industry averages for insulation measures and comparable to industry standards for low carbon heat.

4.2 Applications, vouchers issued, and installations

The Scheme had funding able to benefit around 600,000 homes,²⁸ but applications were made for only 113,739 properties. This was for a total of 169,012 measures (at an average of 1.49 measures per property). Overall, this shows that the reach of the Scheme was considerably lower than it could have been.

Analysis was undertaken of Scheme data up to 6th August 2021: this date was chosen to be close to the time of the applicant survey, to ensure that the time frames of reference were as similar as possible. At that time the Scheme had closed to new applications, so the number of applications could not increase, but applications were still being processed. Because of this, it was not possible to say how many applications would finally proceed to have vouchers issued or how many properties would benefit. A small backlog of voucher applications was still being processed in August 2021, which was cleared before the end of 2021.

By early August 2021, 78,187 individual vouchers had been issued (46% of the total number of voucher applications submitted) for 62,341 properties (an average of 1.25 per property²⁹). Additionally, by this date 32,038 measures had been installed in 29,354 properties (an average of 1.09 measures per property).

Table 4.1: Achieved coverage: households and measures

Achieved: to 6th August 2021	Number of properties	Number of measures
Applications	113,739 ³⁰	169,012
Vouchers issued ³¹	62,341	78,187

²⁸ September 2021 NAO Report: <https://www.nao.org.uk/wp-content/uploads/2021/09/Green-Homes-Grant-Voucher-Scheme.pdf>

²⁹ Please note that this indicates the number of properties for which at least one voucher was issued. In some cases, applicants applied for multiple vouchers for a single property, of which some were issued and some were not. It should also be noted that although a total of 62,341 property applications had resulted in at least one voucher being issued and not withdrawn/rejected at the time the data was provided, because of the ongoing nature of the scheme some were subsequently cancelled (i.e. not all measures were eligible, or the customer withdrew after the data cut-off date).

³⁰ Page 9 of the September 2021 NAO Report on the GHGVS shows this figure as 113,738. The reasons for the slight discrepancy here are unclear, but the difference is not significant and both were based upon the same dataset.

³¹ Please note that at this point in time some vouchers had been withdrawn after they were issued (i.e. the applicant withdrew their application). These 2,436 vouchers and 1,410 properties have been removed from the totals as shown. Please also note that some further vouchers may have been withdrawn after 6th August 2021.

Measures installed	29,354	32,038
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4.3 Nature and type of measures

4.3.1 Applications, vouchers issued and installations

As stated above, across all households applying, applications were made for 169,012 measures: 129,140 (76% of applications) were for primary measures, and 39,872 (24%) were for secondary measures. Table 4.2 shows an analysis of individual voucher applications, vouchers issued and installations by type of measure.

Table 4.2: Numbers of individual voucher applications, vouchers issued and installations

	Total number of vouchers applied for (a)	Number of vouchers issued ³² (b)	% of vouchers applied for subsequently issued (b/a)	Number of installations (c)	% of applications completed installation (c/a)	% of vouchers issued completed installation (c/b)
All measures	169,012	78,187	46%	32,038	19%	41%
All primary measures	129,140	67,471	52%	31,180	24%	46%
All insulation	97,870	48,844	50%	23,647	24%	48%
All low carbon heat	31,270	18,627	60%	7,533	24%	40%
All secondary measures	39,872	10,716	27%	858	2%	8%

Overall, just under half (46%) of all vouchers applied for have been issued (shown in the table as b/a). Vouchers for secondary measures were less likely to have been issued (27%) than

³² The figures in this column exclude any vouchers which had been withdrawn or rejected by 6th August 2021.

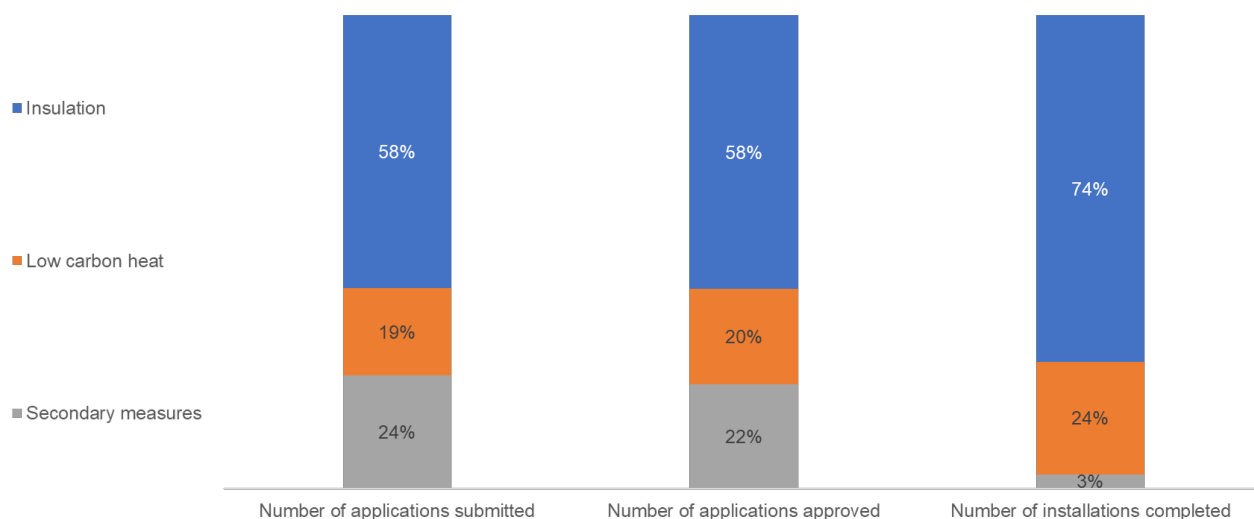
those for primary measures (52%). Vouchers for low carbon heat measures were the most likely to have been issued (60%).

Vouchers issued for primary measures were considerably more likely than those issued for secondary measures to have completed installation. In the Scheme dataset which covers the period to 6th August 2021, only 8% of all secondary measures applied for had been installed, compared with 46% of primary measures. This is likely to be due to the fact that applicants were only able to redeem vouchers for secondary measures once they had installed and redeemed a voucher for at least one primary measure.

Vouchers for low carbon heat measures were less likely than insulation measure vouchers to have completed installation by the time of writing (40% of issued vouchers for low carbon heat had proceeded to installation vs. 48% for insulation measures).

Secondary measures made up 24% of applications submitted and 14% of vouchers issued, but only 3% of completed installations (see Table 4.2). Taken together, while insulation measures comprise 58% of applications submitted and 62% of vouchers issued, they make up three quarters (74%) of all installed measures.³³

Figure 4.1: Profiles of applications submitted, vouchers issued and installations completed



Source: Green Homes Grant Voucher Scheme Data, to 6th August 2021
 NB: Totals sum to more than 100% because of rounding error

³³ Amongst the reasons for this are likely to be: (1) **ease of installation**: loft insulation, cavity insulation and pitched roof insulation are simple measures that can be done quickly with minimal disruption. By contrast, low carbon heat systems are more involved and take longer and are more disruptive (often needing replacement of radiators or the installation of underfloor heating, etc.); (2) **supply chain issues**: related to the above, loft, cavity and roof insulation have long-standing, well-developed supply chains (this is something we will investigate further in the next stage of the evaluation, but capacity issues with some of the more specialist low carbon heat installers may have created delays in getting people booked in); and (3) **seasonal issues**: e.g. getting heating systems installed in the summer rather than the winter so householders don't get cold.

4.3.2 Applications, vouchers issued and installations by measure

Table 4.3 provides more detail on the number and profile of applications and installations by measure. The most common measure applied for was external solid wall insulation (26,034 applications), followed by loft insulation (23,703 applications). Despite attracting the most applications, proportionately fewer external solid wall insulation vouchers had proceeded to installation (only 32% vs. 46% on average for all primary measures, shown as (c/a) in the table below). Conversely, more than half of vouchers for pitched roof insulation (65%), cavity wall insulation (62%) and loft insulation (60%) had been installed by 6th August 2021. Within the low carbon heat category, 54% of hybrid heat pump vouchers, 38% of solar thermal applications and 43% of air source heat pump vouchers had proceeded to installation.

Vouchers issued for primary measures least likely to have proceeded to installation were underfloor insulation (solid floor) (18%), park home insulation (24%) and ground source heat pumps (23%). In the case of the latter, this is likely to be due to the amount of disruption involved (including laying outdoor pipes and/or drilling boreholes).

As stated above, relatively few installations of secondary measures had been recorded within the Scheme data by 6th August 2021.

Table 4.3: Measures and applications

	Total number of vouchers applied for (a)	Number of vouchers issued ³⁴ (b)	% of applications for which vouchers were issued (b/a)	Number of installations (c)	% of applications completed installation (c/a)	% of vouchers issued completed installation (c/b)
PRIMARY MEASURES	129,140	67,471	52%	31,180	24%	46%
Insulation	97,870	48,844	50%	23,647	24%	48%
External solid wall insulation	26,034	14,741	57%	4,754	18%	32%
Loft insulation	23,703	10,560	45%	6,386	27%	60%
Pitched roof insulation	12,109	8,207	68%	5,331	44%	65%
Cavity wall insulation	10,662	5,962	56%	3,702	35%	62%
Internal solid wall insulation	7,243	2,154	30%	775	11%	36%
Under-floor insulation: Suspended floor	7,254	3,095	43%	1,466	20%	47%
Room-in-roof insulation	3,122	1,421	46%	469	15%	33%

³⁴ The figures in this column exclude any vouchers which had been withdrawn or rejected by 6th August 2021

	Total number of vouchers applied for (a)	Number of vouchers issued ³⁴ (b)	% of applications for which vouchers were issued (b/a)	Number of installations (c)	% of applications completed installation (c/a)	% of vouchers issued completed installation (c/b)
Flat roof insulation	3,074	1,208	39%	417	14%	35%
Under-floor insulation: Solid floor	2,762	308	11%	56	2%	18%
Park home insulation	1,907	1,188	62%	291	15%	24%
Low Carbon Heat	31,270	18,627	60%	7,533	24%	40%
Solar thermal	17,892	11,753	66%	4,458	25%	38%
Air source heat pump	10,360	5,457	53%	2,326	22%	43%
Hybrid heat pump	2,150	1,362	63%	732	34%	54%
Biomass boiler	608	8	1%	6	1%	75%
Ground source heat pump	260	47	18%	11	4%	23%
SECONDARY MEASURES	39,872	10,716	27%	858	2%	8%
Energy efficient	15,760	5,336	34%	143	1%	3%

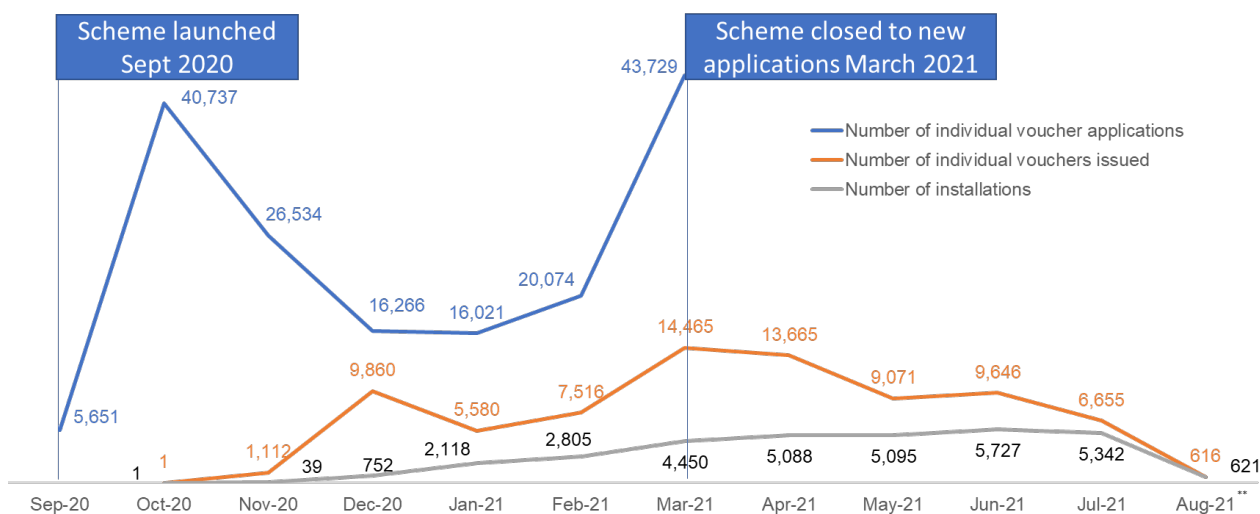
	Total number of vouchers applied for (a)	Number of vouchers issued ³⁴ (b)	% of applications for which vouchers were issued (b/a)	Number of installations (c)	% of applications completed installation (c/a)	% of vouchers issued completed installation (c/b)
replacement doors						
Heating controls	12,784	2,520	20%	523	4%	21%
Double/triple glazing	6,632	1,809	27%	180	3%	10%
Draught proofing	3,196	985	31%	7	<0.5%	1%
Secondary glazing	907	64	7%	5	1%	8%
Hot water tank thermostats	328	2	1%	0	0%	0%
Hot water tank insulation	265	0	0%	0	0%	0%

4.4 Timelines for installations

4.4.1 Time differences between applications and installations

Figure 4.2 shows the volume of applications, voucher issues and installations (as recorded in Scheme data) from the Scheme's launch to early August 2021. It shows that there were time lags between applications, vouchers being issued and installations.

Figure 4.2: Number of applications, vouchers issued and installations by month



Source: Green Homes Grant Voucher Scheme Data, to 6th August 2021
 ** NB Data only covers the period to 6th August 2021, so the number of vouchers approved and installations completed in August 2021 will be higher than shown in the chart. Please note the number of vouchers issued figures exclude any vouchers which had been withdrawn or rejected by 6th August 2021.

The peak month for applications was October 2020, with a further peak in March 2021 in the run up to the Scheme closing to new applications. The number of applications was significantly lower between November 2020 and February 2021, which may be due to a mix of factors, as reported by installers and applicants, including difficulties gaining quotes and lower levels of marketing for the Scheme.

A small number of vouchers (1,112) were issued before end November 2020, but this rose rapidly to almost 11,000 in December 2020. The low number of vouchers issued prior to the end of November were likely to be due to the delays in launching the Scheme administrator’s digital system which created a backlog in processing vouchers. The number of vouchers issued fell in January and February 2021 – perhaps because the Scheme administrator was dealing with more complex cases - but rose again in March 2021.

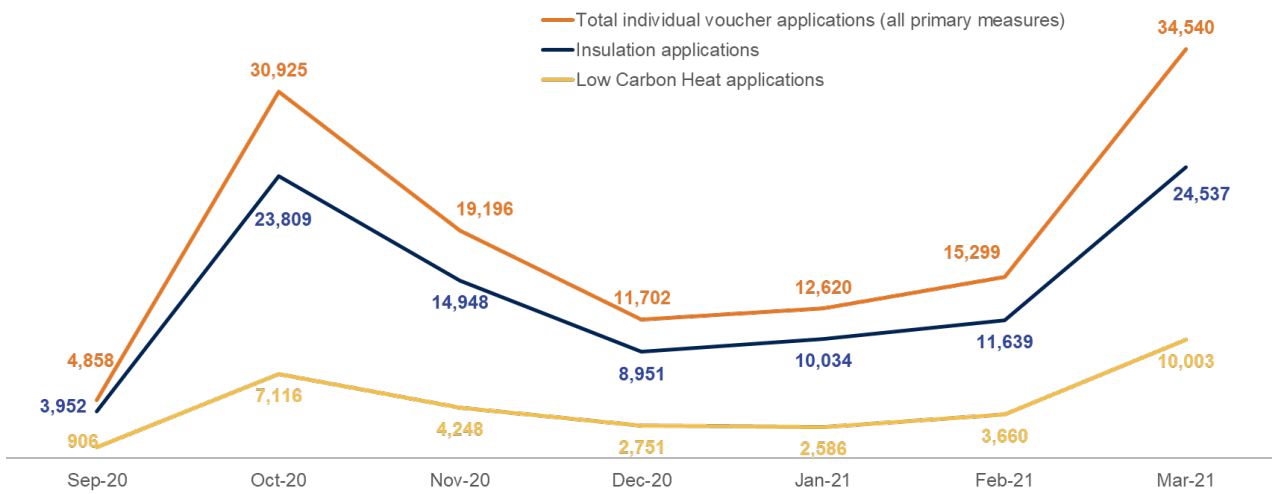
The first installations were logged on the Scheme database in November 2020,³⁵ two months after the first applications were logged. The number of installations in November and December 2020 were low (less than 1,000 in total). Numbers of installations built to around 5,000 installations per month from April 2021 onwards.

The three charts which follow break down numbers of individual voucher applications, vouchers issued and installations of individual primary measures, as shown in the Scheme data, by measure group (insulation, low carbon heat).

Volumes follow similar patterns to the overall trend shown above, with applications increasing to a peak in October 2020, and again in March 2021 as the closing date for applications approached.

³⁵ One voucher was issued and one installation was recorded in the scheme database in October 2020.

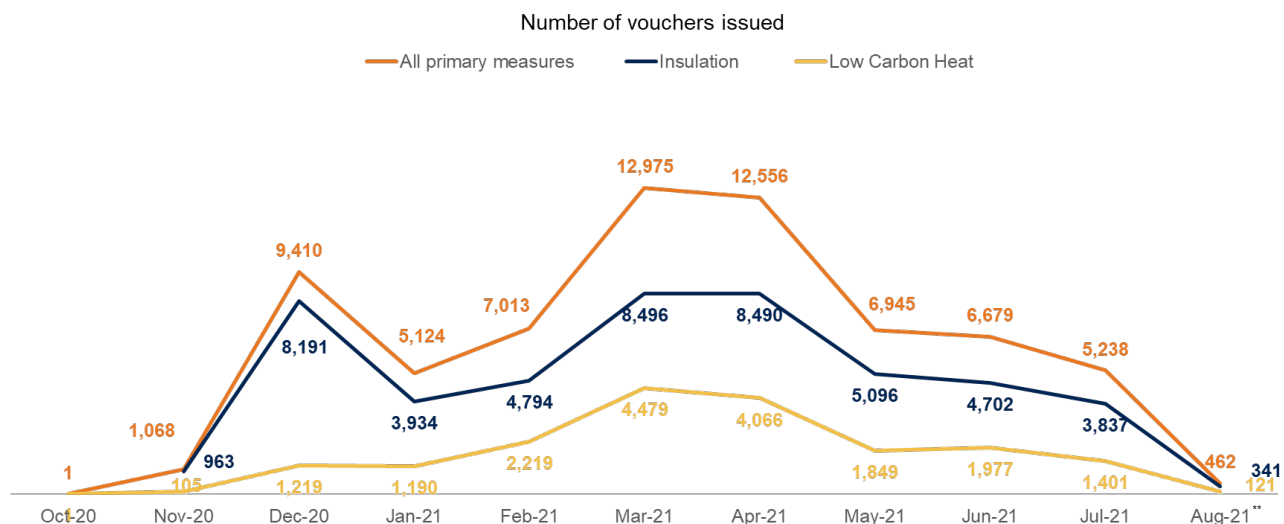
Figure 4.3: Number of applications for individual measures by month and measure group



Source: Green Homes Grant Voucher Scheme Data, to 6 August 2021

The number of individual vouchers issued for primary measures followed similar patterns, but with the number of low carbon heat vouchers issued at a lower level than insulation vouchers issued. For insulation vouchers issued, there was an early spike in the number issued in December 2020 (8,191), which fell sharply by around 5,000 in January 2021 before growing gradually to around 8,500 per month in March and April 2021. For low carbon heat, the flow of vouchers issued has been less subject to peaks and troughs and has varied between a low of 1,190 (January 2021) and a high of 4,479 in March 2021. The number of vouchers issued for all measures dropped considerably in May 2021, two months after the Scheme closed to new applications.

Figure 4.4: Number of individual vouchers issued by month and measure group



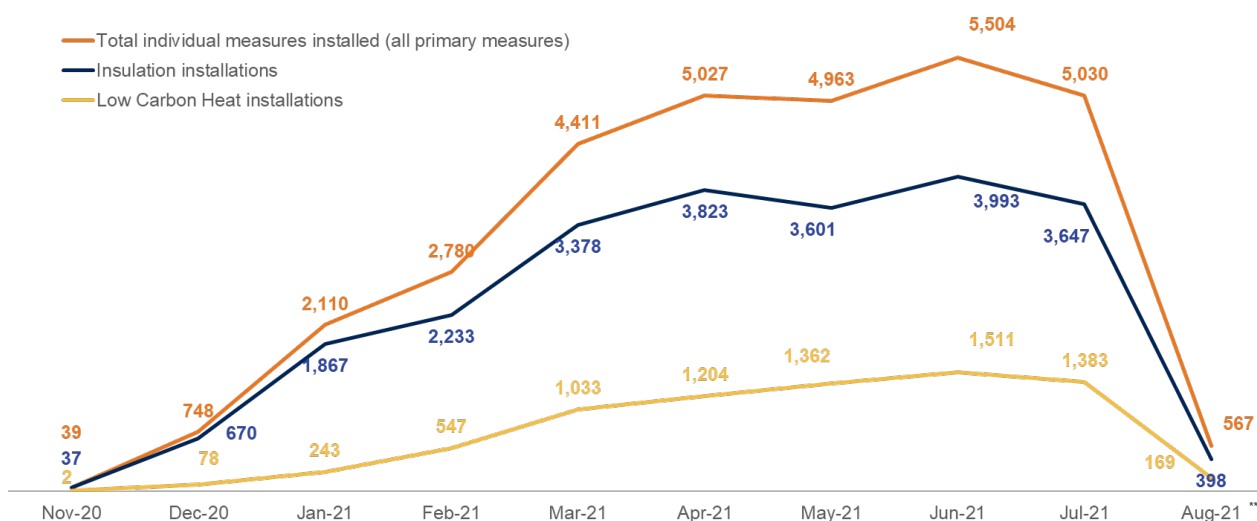
Source: Green Homes Grant Voucher Scheme Data, to 6th August 2021

** NB Data only covers the period to 6th August 2021, so the number of vouchers approved in August 2021 will be higher than shown in the chart. Please note the number of vouchers issued figures exclude any vouchers which had been withdrawn or rejected by 6th August 2021.

The number of installations followed a similar pattern to vouchers issued, with numbers building to reach over 4,400 installations per month from March 2021 onwards. Once again,

the growth of installations of low carbon heat measures was less sharp than the growth of installations of insulation measures.

Figure 4.5: Number of installations by month and measure group



Source: Green Homes Grant Voucher Scheme Data, to 6th August 2021

** NB Data only covers the period to 6th August 2021, so the number of installations completed in August 2021 will be higher than shown in the chart

4.5 Secondary measures and evidence of follow-on measures

This section sets out any evidence of other measures being implemented by applicants (not through the Scheme) which might have been catalysed or facilitated by participation in the Scheme – i.e. spill-over effects, based upon responses by applicants to the applicant survey.

4.5.1 Scheme additionality

With respect to the measures for which they had applied for vouchers, applicants responding to the survey were asked to say how likely they would have been to have the improvements installed to the property if the GHGVS had not been available. This provides a measure of likely demand for measures in the absence of the Scheme.

Overall, applicants said they would have been likely to have had 23% of measures installed if the Scheme had not been in place, but 62% of measures would have been unlikely to have been installed without this Scheme. Although based on self-reported evidence, this seems to suggest that the Scheme has stimulated demand for the installation of around 50,000³⁶ measures (or additional measures) in around 46,000 properties³⁷. Scheme additionality increased amongst applicants to the low-income Scheme: these were significantly more unlikely to have installed the measures if the Scheme had not been in place (71% of measures

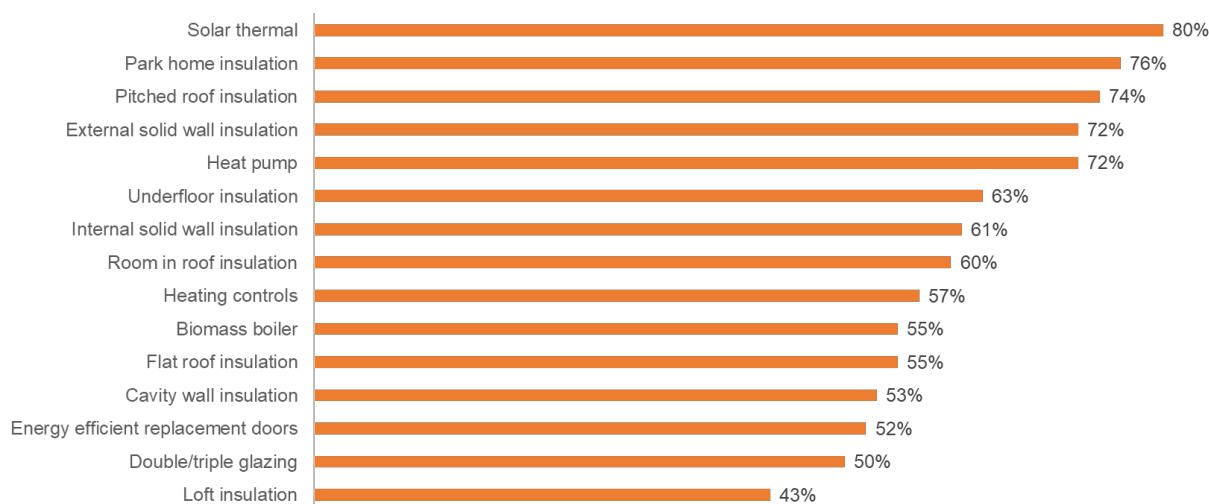
³⁶ Assuming that 79,765 measures will be installed through the scheme, and 63% of these would have been unlikely to have been installed without the scheme (taken from applicant survey data), this means that 50,195 measures have been installed which would have been unlikely to have been installed without the scheme (79,765*63%).

³⁷ Assuming an average of 1.09 measures per property (50,195/1.09=46,050)

applied for by low-income Scheme applicants vs. 48% of measures applied for by main Scheme applicants).

The extent to which applicants would have installed measures without the Scheme varied considerably by individual measures. Two fifths (43%) of those applying for loft insulation said they would have been unlikely to have installed it without the Scheme, and around half of those applying for double/triple glazing, energy efficient replacement doors and flat roof insulation said this. At the other end of the spectrum, four fifths (80%) of those applying for solar thermal said they would have been unlikely to install without the Scheme, and three quarters said this about park home insulation. Seven in ten of those applying for external solid wall insulation, pitched roof insulation and heat pumps said they would have been unlikely to install without the Scheme. These findings appear to indicate that the Scheme created more demand for energy efficient and low carbon heating measures that are less common (e.g. heat pumps) or not as commonly included in government Schemes (e.g. park home insulation).

Figure 4.6: Proportion of applicants applying for vouchers for each measure who say they would be unlikely to have installed each measure if the Green Homes Grant Voucher Scheme had not been available



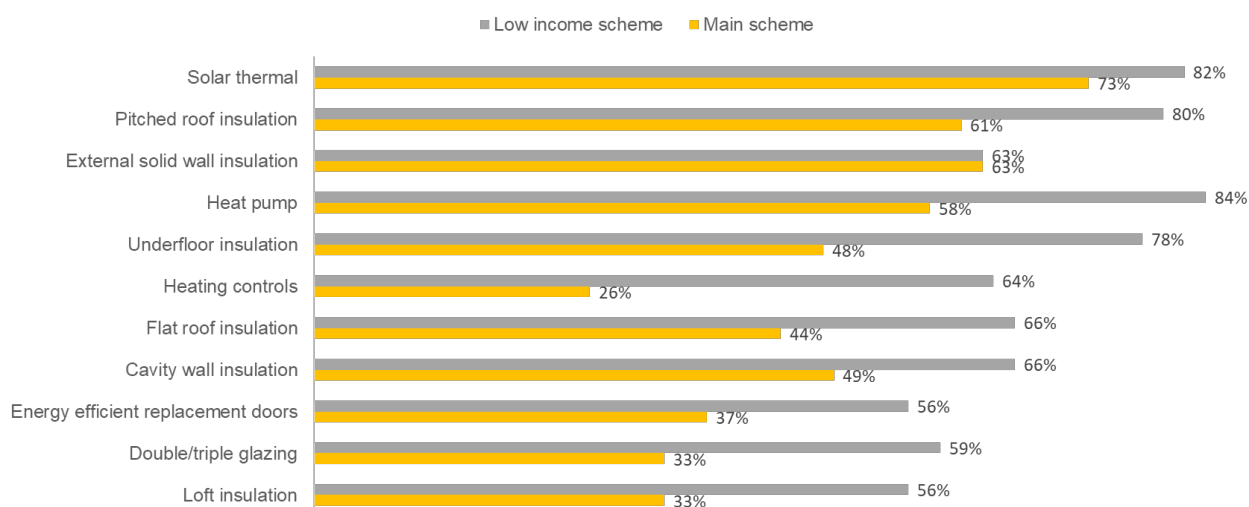
F1: If the Green Homes Grant Voucher scheme had not been available, how likely would you have been to have had the following improvements installed to this property anyway?

Source: Green Homes Grant Voucher Scheme Applicant Survey

Base: All measures followed up where base is over 50 (some measures not shown. Bases under 100 for Internal solid wall insulation (92), biomass boiler (59). All other bases over 100)

It is also clear that the Scheme created higher levels of demand for applicants on the low-income Scheme than on the main Scheme. For example, 82% of solar thermal measures applied for through the low-income Scheme would have been unlikely to have been installed without the Scheme, compared with 73% through the main Scheme. The biggest differences were for heating controls (64% through low-income Scheme would have been unlikely to have been installed vs. 26% through main Scheme), underfloor insulation (a 30 percentage point difference), heat pumps and double/triple glazing (both 26 percentage point difference) (see Figure 4.10).

Figure 4.7: Proportion of applicants applying for vouchers for each measure who say they would be unlikely to have installed each measure if the GHGVS had not been available – breakdown of low-income vs. main Scheme



F1: If the Green Homes Grant Voucher scheme had not been available, how likely would you have been to have had the following improvements installed to this property anyway?

Source: Green Homes Grant Voucher Scheme Applicant Survey

Base: All measures followed up where base for both main scheme and low income scheme are over 50 (some measures not shown)

4.5.2 Future demand for (follow-on) measures

To further understand the extent to which the Scheme has stimulated demand for further measures, all applicants responding to the survey were asked whether they are more or less likely to consider other energy efficient or heating improvements in the future. Those who had completed installations through the Scheme were asked to answer in relation to their experiences of having the measures installed.

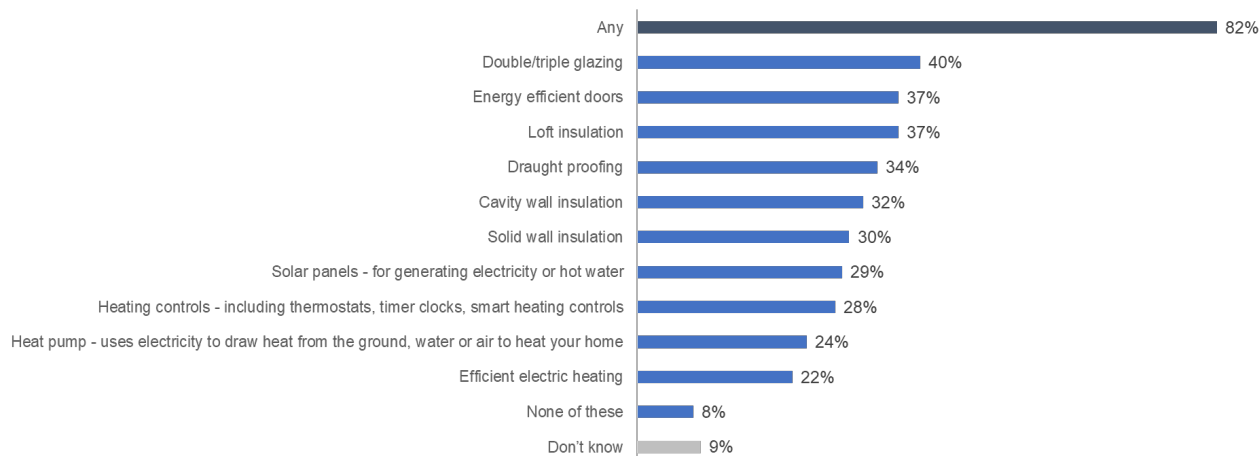
It does appear that the Scheme has stimulated demand for follow on improvements, in particular for those who have already completed installation of measures. The majority of applicants (58%) said they would be more likely to consider other future measures, including 35% who said they would be a lot more likely. Among those that have had at least one measure installed, the proportion who would be more likely to install future measures rises to 78%, within which 51% would be a lot more likely to do so.

Experience of the Scheme has put off few applicants from further installations. Only one in ten of all applicants (11%) said they would be less likely to install follow on improvements: 5% of those that have had at least one measure installed.

In addition, all landlords were asked which, if any, listed improvements they would consider making to their tenanted properties in the future. While at this point their future activities cannot be linked to their experiences of or interaction with the Scheme, landlords who had applied for GHGVS vouchers for their tenanted properties were very likely to consider future improvements. The majority (82%) of landlords said they would consider making any improvements, including 40% who would consider double/triple glazing, 37% who would consider replacement doors and 37% who would consider loft insulation. Future demand for

low carbon heating was also fairly high, with 29% saying they would consider solar panels for their tenanted properties, and 24% would consider a heat pump.

Figure 4.8: Energy efficient improvements landlords would consider making to tenanted properties in the future



I3: Which, if any, of the following energy efficiency improvements would you consider making in any properties you rent out to tenants in the future?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All landlords (177)

4.6 Quality of installations

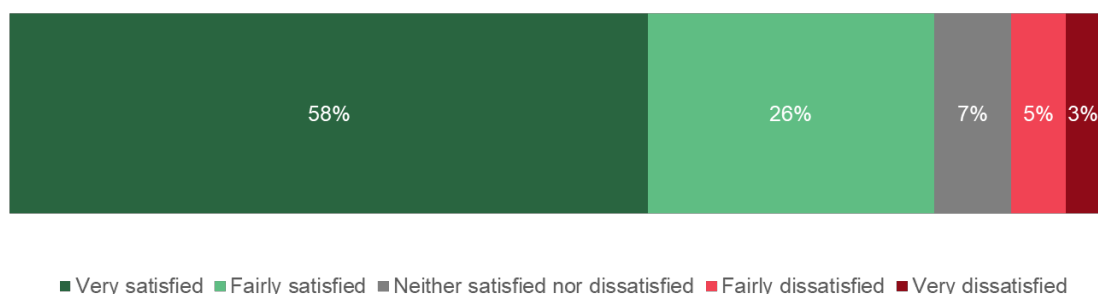
Evidence for the quality of installations is drawn from the applicant and installer research, and qualitative interviews with GHGVS auditors / quality assurance staff from auditing organisations and representatives from certification bodies. This is then compared with Scheme data on installer accreditations.

4.6.1 Applicant perceptions of quality

Applicants who had completed the installation process were overwhelmingly satisfied with the quality of their works: 84% indicated satisfaction, including 58% who were very satisfied. Less than one in ten (8%) said they were dissatisfied, with 3% very dissatisfied.

Applicants who had completed installation of park home insulation were particularly likely to express satisfaction with the quality of the installation (93%), while levels of satisfaction were lowest amongst those installing secondary measures (e.g. heating controls, hot water tank insulation (77%), draught proofing, glazing, replacement doors (79%)).

Figure 4.9: Applicant perceptions of quality of installation



H1: Thinking about having the energy efficient or heating home improvement(s) installed, how satisfied were you with the following? B: The quality of the installation

Source: Green Homes Grant Voucher Scheme Applicant Survey

Base: All who have had at least one installation completed (1609)

The survey findings align with the findings in the qualitative interviews: participants whose installations were complete typically reported high levels of satisfaction with their installations. Where issues with the works were raised, these were either relatively minor (e.g. a roof membrane not being perfectly flat) or the result of unmet expectations (e.g. where installers hadn't completed minor ancillary works that they had previously said they would complete).

Some other qualifiers to these levels of satisfaction emerged from the qualitative interviews:

- Although works may look to have been completed in a neat and tidy way, it is difficult to judge the energy performance of installed measures. This was noted to be either because not enough time has passed to see any savings on energy bills (particularly where they have yet to experience a full heating season post-installation) or because measures were installed without sub-metering (e.g. for a solar thermal installation where the participant felt the lack of a smart meter was a missed opportunity that prevented them from judging the whole project). Another wave of the applicant survey is planned from April 2022, which will provide post-installation evidence after a full heating season.
- Some participants may need to adjust to the installed technology. In the case of a heat pump, one participant noted that there is some noise to adjust to and that the heating profile (lower system temperatures and more stable ambient temperatures) is very different to their previous experience.

4.6.2 Auditor assessments of quality

Auditors (including desk-based and on-site) were asked whether they had encountered any issues with the quality of installations under GHGVS. Only one auditor had any negative commentary on quality emerging from the Scheme and, to them, this was related more to the overall approach of the Scheme, which lacked a 'whole house' approach, than to the quality of works. This participant considered that by focussing on individual measures rather than the whole house, the Scheme risked lower quality performance outcomes in the long run. Such an approach, they suggested, would make for more expensive future works and/or retrofits that are not as effective as they could be in the long run, making the point:

“If you’re going to do the property, do it right. Do it once.”

However, auditors also reported issues with installers meeting the compliance standards of the Scheme. The auditor mentioned above, who had experienced quality issues, suggested that some installers involved in gaming the system may fall short of standards in order to pursue quantity over quality of works. Where others mentioned compliance issues, this wasn’t necessarily a quality issue:

“There’s a spectrum of compliance problems, from things which could potentially have detriment to consumers, to things which are more of a procedural error.”

One noted that they had inspected several non-compliant works that had occurred because ‘some installers do not fully understand the required standards for the GHGVS.’ Auditors suggested increased feedback and communication with installers to help them understand the required standards of the Scheme and improve the quality of works as well as compliance with standards. In one example the auditor noted that after feeding back to industry, rates of compliance had seemed to improve, seeing this feedback loop as integral to their role as an auditor.

All auditors interviewed considered that the GHGVS had played a positive role, at least in part, in improving the quality assurance of installations. Interviewees noted that installers they engaged with had been listening to details of non-compliance issues shared by auditors and had been keen to learn from any mistakes made so that they can improve in future. Some auditors also highlighted the benefits of the PAS standards, which were said to be strict, but had improved the quality of installations.

Auditors were asked whether they had needed to issue any instructions for amendments to installations as a result of their inspection or, otherwise, received an appeal. Only minor instances were reported, and they were typically due to administrative issues such as wording errors or submitting the wrong type of documentation. One auditor acknowledged that these issues are typical of the types of problems that they have experienced while working on other Schemes such as the ECO and were not specifically unique to the GHGVS.

Auditors were asked whether they had seen any improvements in the quality of installations over the past six months in the wider market outside of the GHGVS. Some stated that they had seen a noticeable improvement in the standard of installations outside of the Scheme, while others said that they had seen no noticeable change in quality, explaining that it was too difficult to determine, or that they had not been auditing long enough to judge any changes in quality. Those who reported an improvement in quality attributed this to the standards introduced with the GHGVS. However, there was a suggestion that while the Scheme may have increased the quality of installations overall, it may have had a negative impact on some installers who were overwhelmed by the Scheme’s complex regulations.

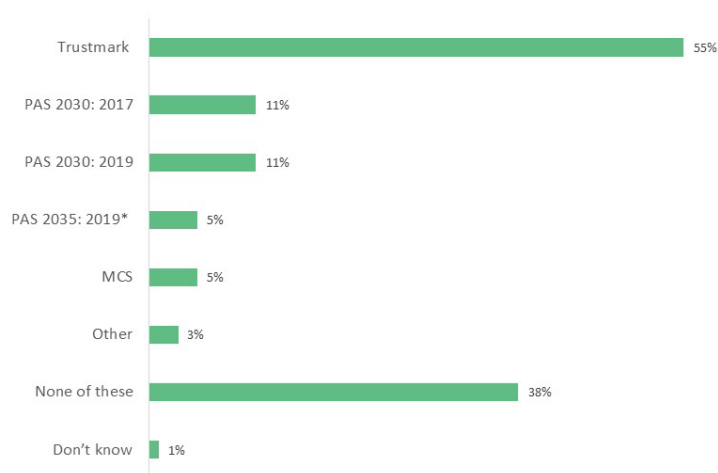
Auditors were asked what impact the decision to require MCS and PAS standards will have on the quality of future installations outside of the GHGVS. All interviewed auditors believed that the introduction of these standards for Schemes would have a positive impact on the quality of installations. They also highlighted that changes need to be made to the standards for them to

be effective. There was a perceived need for standards to be simplified for installers to fully understand and properly implement them.

4.6.3 Installer accreditations

The requirement for installers to be Trustmark registered and PAS or MCS certified, depending on the measure type, was brought in as part of the Scheme to improve quality of installations. To understand the potential impact on quality, all installers completing the installer survey were asked whether they had completed any certifications / registered with TrustMark – i.e. become accredited with TrustMark - to enable their participation in the GHGVS.

Figure 4.10: Installer certifications / accreditations used by installers to participate in the GHGVS



* (for park homes, high rise buildings, and buildings that are traditionally constructed and protected)

D1: Which, if any, of these additional certifications or accreditations has your business gained to enable you to participate in the Green Homes Grant Voucher Scheme?

Source: Green Homes Grant Voucher Scheme Installer Survey

Base of all respondents: 218. Which, if any, of these additional certifications or accreditations has your business gained to enable you to participate in the Green Homes Grant Voucher Scheme?

This shows that while 38% of installers did not newly register with TrustMark / gain new certifications, three fifths (61%) did. TrustMark registration was the most common change amongst these survey participants (by 55%), with around one in ten reporting they had newly gained PAS 2030:2017 or PAS 2030: 2019.

Where certification / accreditation was gained, this was typically reported as a direct effect of the Scheme. For example, 86% of installers who reported that they had newly registered with TrustMark said this was as a direct result of their involvement with the Scheme.³⁸

These findings suggest that the Scheme is having a direct impact on installers gaining accreditations / certifications that may result in higher levels of quality in installation.

4.6.4 Summary

Taking these findings all together, there is evidence to suggest that quality of installations under the Scheme are typically of a high standard, driven by the requirements of the Scheme.

³⁸ for other accreditations other base sizes are very low and are not reported separately

Applicants note high levels of satisfaction in quality, with only minor concerns. This is reflected in the findings of auditors who note that poor quality installations are in the minority and generally related to lack of installer understanding around required compliance standards. The auditor findings highlight the importance of accreditations in driving high standards of quality and, combined with the installer survey data, there is evidence that the GHGVS is increasing uptake of these accreditations leading to a positive impact on quality.

4.7 Fraud and gaming

In the paragraphs that follow a descriptive analysis of gaming and fraud instances is presented. This analysis is based on evidence collected through the installer and applicant surveys, as well as through interviews with applicants and certification bodies. Please refer to section 2.3 of this report for an outline of the programme fraud prevention measures in place.

Two out of eight certification bodies interviewed said they had encountered gaming or fraudulent activity in the Scheme. One certification body said that they had come across instances of over-inflation of prices caused by the specified maximum funding available for measures; whilst the other commented that fraudsters 'are a rarity'. The certification body suggested that, once identified, BEIS should attempt to work with the gaming installers to be able to better understand and more effectively rectify the issues causing this behaviour.

Applicants also raised potential issues about installer fraud, gaming, and misconduct. These issues can be classified as either suspected wrongdoing or installers overcharging:

Examples of suspected wrongdoing:

- One installer had insisted that the applicant pay £150 for an EPC rating as precondition to receiving the quote. Following payment, the installer admitted that the evaluation was not a valid EPC. The installer was subsequently unresponsive to calls and reluctant to complete installation.
- Another installer reportedly wished to charge £250 for providing a quote.
- A visually impaired applicant reported their experience of an installer committing fraud by contacting them to offer a fuel heat pump and then applying on their behalf without their knowledge. The applicant only became aware of this fraud on being called by the Scheme to query the cost of the installer's quote. The applicant subsequently chose to go ahead with the installation, but with another installer.

It is interesting that in this latter case, it was the Scheme processes that helped to uncover the wrongdoing.

Examples of installers overcharging:

- On visiting the applicant's home to provide a quote, one installer pressured the applicant to sign a contract for installation at a greatly inflated price despite their voucher not

having been issued. Acceptance by the applicant would have rendered the voucher application void making this also an example of suspected wrongdoing.

- One installer arbitrarily increased the price on learning the applicant was on the low-income Scheme.
- One applicant suspected that the installer had provided an inflated price because the applicant was applying through the GHGVS, observing that the installer's quote was approximately twice as expensive as a quote he had obtained from another installer before he got involved with the Scheme.
- Another applicant reported that an installer had quoted a price approximately three times higher than that obtained from other installers and, when challenged by the applicant, had replied that this should not be of concern to applicant given the latter was in receipt of the subsidy.

Considering the above, there is evidence from both the applicants and accreditation bodies of installers overcharging under the Scheme. The unintended effect that Schemes of this nature may incentivise installers to overcharge has also emerged from other evaluations. For instance, the evaluation of the Green Deal Communities PRS funding (2017)³⁹ found that landlords' existing networks of installers could often complete private installations more quickly and at a lower overall cost than the subsidised installations.

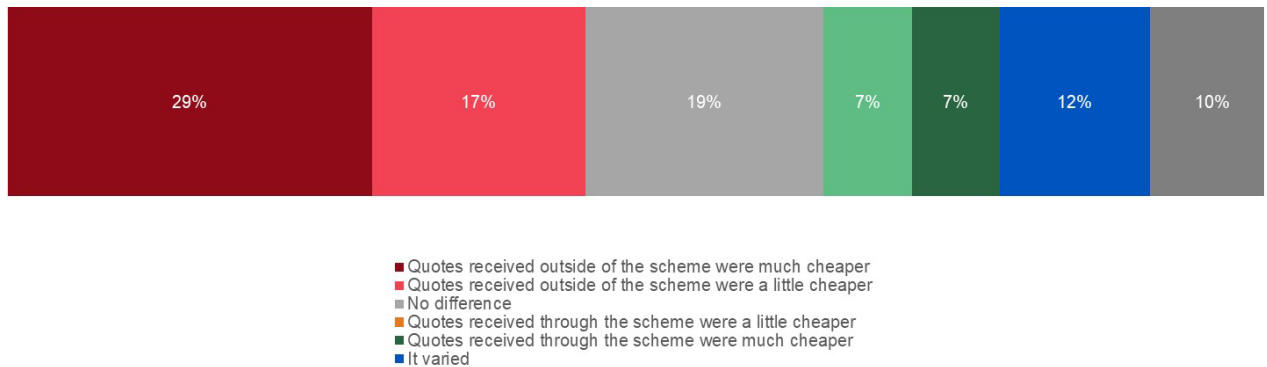
Evidence from the applicant and installer surveys explores this further:

Applicants answering the survey were asked whether they had sought quotations for the works outside of the GHGVS. The 17% of respondents who had received additional quotes outside of the Scheme were asked to compare these with the quotes received through the Scheme. Results highlight a significant skew towards quotes outside the Scheme being cheaper than those through the Scheme: 46% of respondents who received outside quotes found these to be cheaper (29% much cheaper, 17% a little cheaper) compared to 13% who found quotes through the Scheme to be cheaper (7% much cheaper, 7% a little cheaper).

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/602353/Evaluation_of_the_Green_Deal_Communities_PRS_funding.pdf

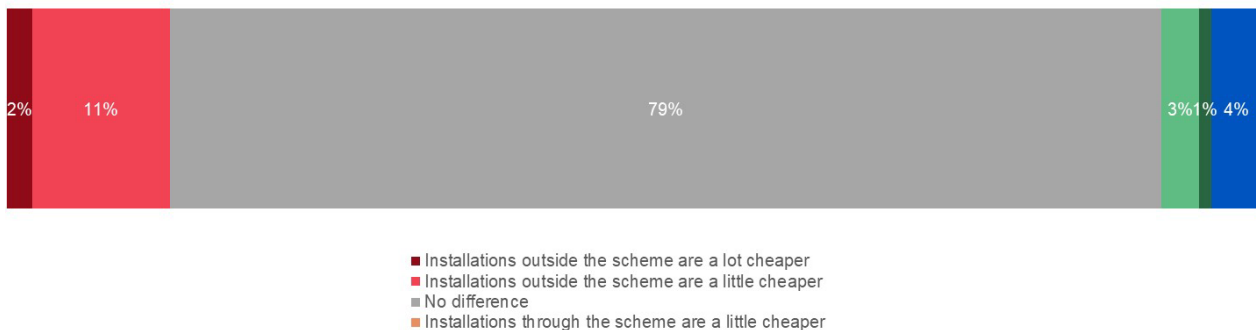
Figure 4.11: Applicant experiences of quotes inside and outside of GHGVS



E7: 'In general, how did quotations received outside of the Green Homes Voucher Scheme compare against quotes received through the scheme?
 Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: All who received quotations for the same measures from installers outside of the scheme (609)

This contrasts with data collected from installers, when asked a similar question:

Figure 4.12: Installer reporting on differences between quotes inside and outside of GHGVS



F1: Thinking about a usual installation on a like for like basis, does your business charge customers more, less or the same for an installation as part of the GHGVS, compared with an installation quoted and delivered to the same customer outside of the scheme?
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: All installers (218)

As may be expected, the overwhelming majority (79%) of installers reported that they charge the same under the Scheme. However, it is important to note that a higher proportion of installers reported charging more under the Scheme (2% a lot more, 11% a little more) than said they charge less (1% a lot less, 3% a little less). This may suggest other legitimate reasons for installers charging more under the Scheme than simply profiteering. This is covered in the next section (4.8).

4.8 Costs of installations

Evidence from installer interviews highlights that the Scheme has resulted in increased costs for some installers. These include additional administration requirements, costs associated with accreditations and a high number of calls from potential applicants that don't convert to sales (typically reported because customers are uneducated around the suitability of their desired measure – e.g. ground source heat pump costs, installation practicalities and land requirements). Therefore, there is the potential that some installers are charging more to cover higher costs.

Analysis of cost data (compared to industry averages) conducted by UCL (see Annex 4) has found that the costs incurred for installing GHGVS measures do tend to be higher than the industry averages for insulation measures. In particular, the average costs of installing in park homes and loft insulation is higher compared to the industry average in all property types. The installation of external solid wall and under floor insulation also appears to be overall higher than the industry average. The average cost of installing low carbon heat measures under GHGVS appears to be overall comparable to the industry averages.

4.9 Chapter summary and next steps for the evaluation

This Chapter provided a snapshot of the Scheme's progress in approving voucher applications and having installations completed. It forecasted estimates of final installations, looked at data on installations by measure and made some suggestions as to the factors that may explain these. It also introduced a discussion of the efficiency of the Scheme with information on the lag between applications being made, vouchers issued, and installations completed.

The Chapter provided some emerging data on the Scheme's effects on consumer (i.e. applicant) follow-on behaviour, as well as Scheme additionality, though both of these themes will be covered in more detail in the outcome evaluation. Finally, it offered initial analysis of the quality of installations, fraud and gaming and costs of the Scheme compared to the industry average. These themes will be covered in greater detail in the outcome evaluation, which will include:

- Final conclusions on the Scheme's effectiveness and efficiency based upon the final Scheme data.
- An analysis of the effects of measures completed on energy efficiency, carbon emissions reduction, and energy bills.
- Further analysis of the effects of the programme on consumers (in terms of their energy efficient behaviour and follow-on measures).
- Scheme additionality.
- The quality of installations, fraud and gaming.
- The costs and benefits of the Scheme for different beneficiaries and stakeholders.

5 Supply chain and economic recovery

This Chapter examines how the wider supply chain has interacted with the Scheme, defines the characteristics of the participating installers, and explores the impacts of the programme on jobs for businesses involved with the Scheme. The findings are based on a telephone survey of 218 UK based companies that participated into the programme and evidence collected through qualitative interviews with an additional 17 installers and 30 other businesses in the supply chain (manufacturers, trainers, auditors, and certification bodies).

5.1 Key findings

- The Scheme seems to have mainly attracted established businesses. Most installers participating in the telephone survey (96%) represent businesses already in operation before the start of the programme, only 4% were companies or subsidiaries set up for the purpose of delivering the Scheme.
- It mainly attracted micro or small businesses: 57% of the companies interviewed in the survey were micro businesses with fewer than ten employees, while 38% were small enterprises and 5% were medium sized companies.
- Prior to GHGVS most low carbon heat installers were MCS-registered. Participation into the Scheme incentivised installers to become TrustMark registered, with 55% of companies getting this accreditation to be able to participate into the programme. Overall, 99% of companies responding to the survey were accredited with TrustMark.
- Prior to GHGVS most installers (72%) had participated in other similar Schemes (RHI, ECO, etc.). By the time of survey this had risen to 82% with participation rates increasing across all queried Schemes (including new Schemes such as the Green Homes Grant Local Authority Delivery (GHG-LAD) and Whole House Retrofit Schemes).
- Overall, installers did not have a positive experience of the Scheme. More than half (54%) of all installers surveyed were very dissatisfied with the Scheme. Other parts of the supply chain, particularly manufacturers, were also highly critical of the Scheme.
- There was general consensus within the supply chain (including amongst installers) that the Scheme had been well-publicised immediately before its launch, but they did not consider the communications to be sufficiently clear (e.g. around what was expected from installers and how the Scheme would operate) and they were disappointed in the lack of consultation with industry in the design and run-up to launch.
- Some installers responded to the Scheme by hiring additional staff – this was the case for 12 out of 17 installers participating in qualitative interviews. However, there is also evidence that some installers had to lay off staff following the impact of delays in processing applications and issuing of vouchers on their company finances.
- No manufacturer consulted reported any job retention or increases in their workforce linked to the Scheme in any way. Some certification bodies hired staff and this growth in

demand was in part attributed to the Scheme. Likewise, training providers consulted had hired staff due to the Scheme.

- Whilst the number of quotes for installation of measures under the Scheme more than doubled, especially in the first months of the Scheme, this did not convert into an equivalent number of installations.
- Installers consulted had experienced very challenging situations in participating in the Scheme, including delays in vouchers being issued by the Scheme provider and issues with the digital platform. Together with a shortage of raw materials, these created barriers to installations.
- The voucher redemption process has also been very challenging: at the time of the installer survey (in June / July 2021), 12% of installers who had conducted at least one installation had had no vouchers paid and 59% were still waiting for 1-10 vouchers to be redeemed.
- The collected findings for installers suggest that issues with the speed of application processing and payment of vouchers on redemption will need to be ironed out and installers reassured of the efficacy of future Schemes to encourage future participation.

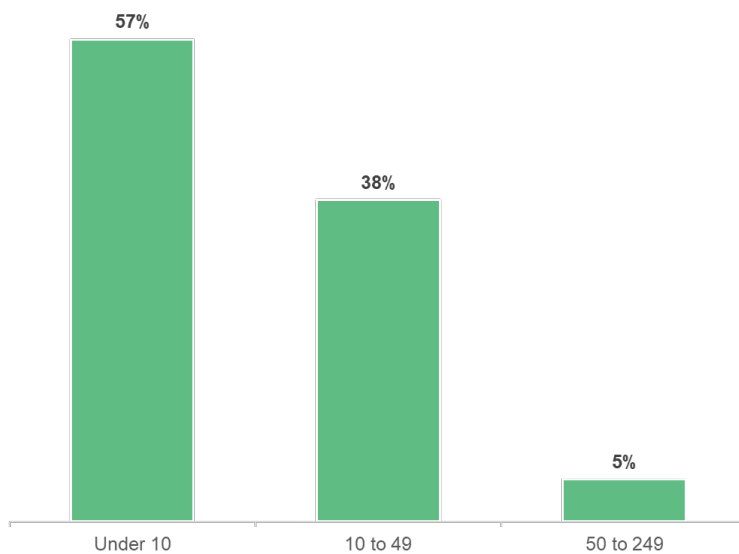
5.2 The profile of the supply chain

5.2.1 Participating installer profiles

According to the installer survey, most companies participating in the GHGVS (96%) were businesses already in operation before the start of the programme; only 4% were companies or subsidiaries set up for the purpose of delivering the Scheme.

57% of the companies interviewed in the survey were micro businesses with fewer than ten employees, while 38% are small enterprises and the remaining 5% are medium sized companies. Amongst the installation companies who participated in the qualitative interviews, five had fewer than 10 employees, a further six had fewer than 25, four had 25-50 and only two had more than 50. Firms participating in the survey reported an average turnover of £0.5 million in the year before the start of the Scheme.

Figure 5.1: Number of employees



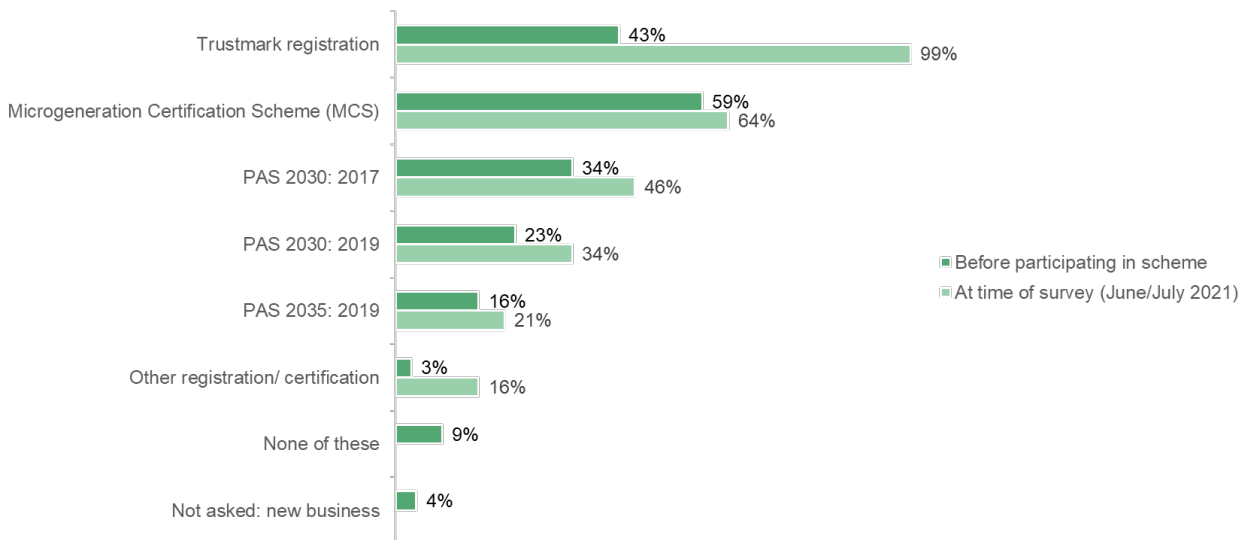
B1: Which of these, best represents the number of employees working in your organisation across the UK as a whole, including yourself?
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: all installers (218)

Amongst installers completing the installer survey, most (59%) had MCS certificates prior to participating in the Scheme, and 43% were already registered with TrustMark. Around one in ten installers (9%) did not have any of the listed certifications prior to participating.

By the time the survey was completed in June/July 2021, only 1% of installers said they did not have TrustMark registration,⁴⁰ indicating that the number of businesses registered with TrustMark doubled post participation in the Scheme. There were also increases in proportions reporting that they hold other certifications, including a five percentage point rise in the proportion saying they hold MCS certification (59% prior to the Scheme, 64% at the time of the survey), a 12 percentage point rise in certification to PAS 2030:2017 and an 11 percentage point rise in certification to PAS 2030:2019. Overall, 61% of all installers completing the survey said they had gained at least one registration/certification to enable them to participate in the Scheme. Among those who became registered/certified as a result of the Scheme, only 8% were planning to obtain the registrations/certifications anyway, while 86% were incentivised by the Scheme.

⁴⁰ TrustMark registration is a requirement to participate in Green Homes Grant Voucher Scheme. It is likely that a small number of installers answered the question incorrectly as 1% said they were not registered.

Figure 5.2: Certifications held



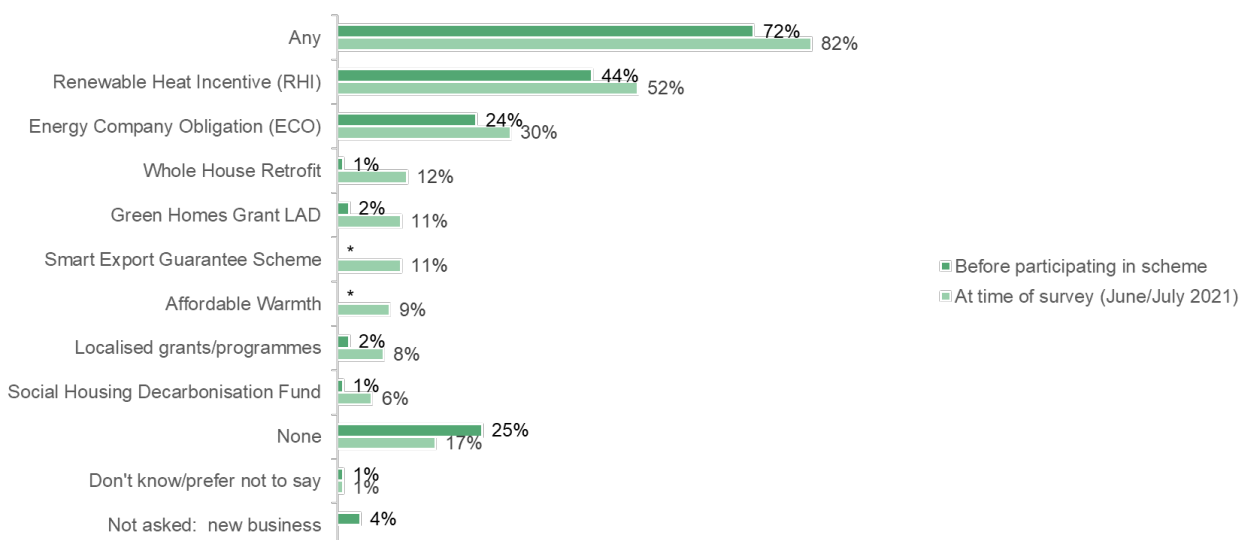
B7: And still thinking about that time, before you became involved in Green Homes Grant Voucher Scheme, which, if any, of these registrations or accreditations did your business hold/ D1: Which, if any, of these additional certifications or accreditations has your business gained to enable you to participate in the Green Homes Grant Voucher Scheme?

Source: Green Homes Grant Voucher Scheme Installer Survey

Base: all installers (218). NB 4% of installers were set up as a result of the scheme and were therefore not asked about certifications held prior to participation.

All installers who were in business before participating in the Scheme were also asked about participation in previous Schemes. Many (72%) were participating in other Schemes before the start of GHGVS, and the growth of some newer Schemes (including the GHG-LAD Scheme) increased this proportion by 10 percentage points to 82% by the time of the survey. Participation in all Schemes had increased, including increases in participation in existing/established Schemes such as RHI and ECO.

Figure 5.3: Participation in other Government Schemes



B6. Before your business's involvement with the scheme, which, if any, Government schemes designed to improve domestic energy efficiency was your business involved in delivering? F3. For which, if any, of these other schemes designed to improve domestic energy efficiency is your business involved in delivering nowadays?

Source: Green Homes Grant Voucher Scheme Installer Survey

Base: all installers (218). NB 4% of installers were set up as a result of the scheme and were therefore not asked about participation in other schemes prior to participation in GHGVS

* Denotes a proportion of less than 1/2% but greater than 0

5.2.2 Manufacturers, trainers, auditors, and certification bodies

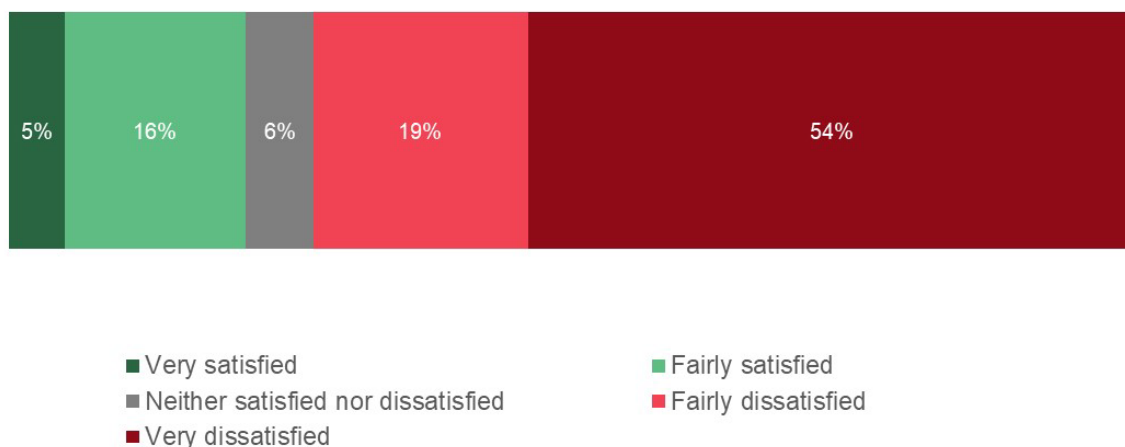
A diverse mix of manufacturers, training providers, auditors and certification bodies were involved in fieldwork with the wider supply chain. Recruitment of interview respondents involved balancing the sample across businesses with different sizes (e.g. SME and large), involvement with different measure types (e.g. renewable or energy efficiency) and length of time involved in the sector. In total, 11 manufacturers, eight certification bodies, six training providers and seven auditing companies were interviewed as part of the evaluation. Evidence from this qualitative work is summarised below, alongside further insights from the installer survey to provide a broader view of the opinions of the supply chain.

5.3 Overall experience of and views of the Scheme

5.3.1 Satisfaction levels

Evidence gathered through quantitative and qualitative research strongly indicate that – overall – installers had not had a positive experience of the Scheme. Only 5% of installers interviewed in the telephone survey reported that they were very satisfied with the Scheme, while three quarters (73%) were dissatisfied with their participation in the Scheme, including 54% who were very dissatisfied.

Figure 5.4: Satisfaction with the Scheme



F4: And thinking overall about your business's participation in the Green Homes Grant Voucher Scheme to date, how satisfied or dissatisfied are you with these things?: Your business's participation in the Green Homes Grant Voucher Scheme overall?

Source: Green Homes Grant Voucher Scheme Installer Survey

Base: All installers (218)

5.3.2 Experience of the Scheme

Installers provided the following feedback during the qualitative interviews:

Initial sign-up: Enthusiasm about the programme was significant at its onset. Installers welcomed the Scheme due to its universality compared to other government Schemes that had often targeted specific subgroups (e.g. social housing tenants). Amongst the installers interviewed, all reported that they had initially considered the programme a notable business opportunity and, as a result, were keen to participate. Reasons for participation varied depending on the size of the business, with small companies signing up to stay competitive in the market and medium sized companies motivated by positive experiences of previous government programmes.

Engagement with the certification bodies: Initial registration with TrustMark was overall satisfactory. Installers who had had to (newly) register with TrustMark overall reported a medium level of difficulty in becoming certified. These interviewees also noted that certification (PAS 2030, PAS 2035) was somewhat slow, but overall, they deemed the process acceptable.

Engagement with the digital platform: As for the Scheme's online platform, installers reported that the support function was inconsistent and often inadequate for resolving queries/issues. Issues mentioned included lack of clarity on application status (i.e. whether the voucher had been issued or not), redemption status (i.e. when payments would be made) and specific issues with vouchers not being recognised and consequently not paid.

Volumes of installations: Across all installers there was consensus that the overall volume of installations completed since the start of the programme had been lower than expected, although one installer noted that the Scheme provider had recently become quicker at approving quotes and so they were expecting to increase their workload from April 2021. In general, installers were expecting the initial rise in interest and were not surprised with the subsequent decrease in requests for quotes in light of the delays experienced.

Voucher redemption: This process was not well rated for reasons similar to the application approval process. Significant delays affected vouchers' redemption, preventing installers from being paid. It was also noted that installers did not get notifications of when the voucher was redeemed but had to rely on the customers telling them. This lack of communication from the Scheme did not help increase trust in the Scheme amongst installers.

Inadequate customer service: Several installers were unhappy with the customer service they had received on following up on vouchers or communications or on lodging complaints. It seems that complaints were not dealt with quickly and on several occasions incorrect information was given, or installers' concerns were not escalated to the management who may have been most appropriate to deal with it.

Good idea, poorly managed: All installers praised the idea of the GHGVS, as conducive of additional business and contributing towards reducing emissions for households. However, they felt it was rushed and administratively flawed.

5.3.3 Specific challenges faced by installers

Installers interviewed through the qualitative research found participation to be difficult. Some of the reasons mentioned were:

Delays in getting quotes approved: There were significant delays occurred in the application process. In some instances, installer quotes were not accepted by the Scheme administrator (i.e. costs were deemed to high) and installers had to requote. This subsequently delayed the approval process. Additionally, the whole application approval process was slowed down for various inefficiencies⁴¹ and took longer than expected, so this generated uncertainty on when the job could be conducted and consequently paid.

Delays in vouchers being processed and issued: This meant that vouchers were also paid later (post-installation) and this had repercussions on installers' cash-flow. One of the consequences of these events was that companies lost confidence in the Scheme and in some instances paused GHGVS installations to prioritise other private work (especially in the first three months of the programme) or had to lay off staff that was hired in preparation for the programme.

Scheme related administration: Views on the administrative tasks associated with the programme are mixed: some installers reported that they were burdensome and required training; others were happy overall and did not complain about it. Something that was mentioned by a few installers was the difficulty around using the app to upload pictures of the measure installed; this tool was perceived as complicated to use and - by some installers - an additional burden.

Shortage of raw materials: On some occasions, businesses interviewed mentioned that a lack of raw materials (due to the combination of the UK's EU exit and route blockages) delayed the installations further.

5.4 Initial awareness of and engagement with the Scheme

Most installers became aware of the Scheme in the Summer of 2020 through the television announcement by the Chancellor (as part of the daily Covid-19 update). They then learned more about the Scheme (prior to its launch) through trade bodies like the National Insulation Association or the Cavity and Insulation Guarantee Agency. They also identified more information about the Scheme through the Internet (i.e. MoneySavingExpert.com, government and TrustMark websites) or through trade association communications and articles in the press. Installers noted that, following the announcement, there was a lot of excitement amongst installers and other supply chain representatives, which meant that installers discussed the Scheme amongst themselves and exchanged views and ideas. One installer reported that there was a 'massive rush to become compliant and TrustMark registered' after

⁴¹ Some examples are: the applicant being asked several times for information already provided at the start of the application, loss of applicant details, and confusion around the application number.

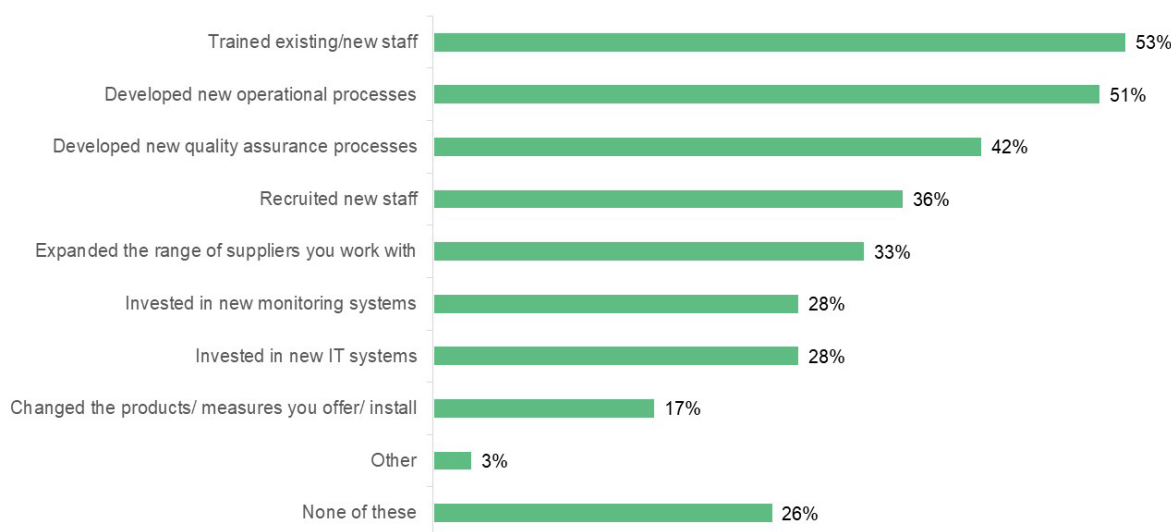
the programme was announced. Businesses recognised the opportunity that it represented for them and wanted to benefit from it.

Installers interviewed believed that the programme was widely publicised prior to its launch. However, they consistently (regardless of whether they were a large or a small business) reported that initial information about the Scheme was unclear or ‘drip fed’ in relation to what was expected from installers and how the Scheme would operate. One installer noted that they were surprised that installers had not been given specific forewarning of the Scheme before its announcement to the general public.

5.5 Set-up, including business preparation

Whilst some installers complained about the lack of clear information prior to the Scheme’s start,⁴² overall, they appeared to have taken actions in preparation for the Scheme. The most common activities undertaken included training existing staff (53%), developing new operations (51%) and quality assurance (42%) processes, and recruiting new staff (36%). Just under a fifth of installers (17%) said they had changed the measures they offered to enable them to participate.

Figure 5.5: Actions taken in preparation for the Scheme



E1. Over and above any other preparations your business made to gain accreditation or certification to enable you to participate in the Green Homes Grant Voucher Scheme, did your business take any of these actions to enable you to participate?
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: all installers (218)

5.5.1 Installer certification / accreditation

Around the process of certification and accreditation, most of the installers interviewed were firms operating in the field for a long time, and – for this reason – they were either already fully certified and accredited or did not have major issues in gaining the necessary requirements. Relatively new businesses had to become compliant and perceived the certification/accreditation process, in some ways, burdensome. On PAS 2035 specifically,

⁴² This finding emerged during the qualitative interviews.

some experienced businesses reported that, at the start of the Scheme, there was insufficient clarity on the need to hold PAS 2035 to be able to conduct installations. This generated uncertainty (especially in the first months of the Scheme), as installers were not sure if they could still proceed without this certificate.

5.5.2 Installer recruitment

Evidence gathered through the qualitative interviews shows that installers prepared differently for GHGVS. Most of the business owners interviewed relied on existing workforce, while others hired or planned to hire additional staff and some used subcontractors.

Table 5.1 presents detailed employment figures for the different functions in the 12 months before the Scheme and after registration. To enable comparisons, averages are based only on businesses which were in operation before the GHGVS (not new businesses set up).

Table 5.1: Average⁴³ number of employees before and after the Scheme

Function	Employment type	Pre-GHGVs	At the time of completing the interview (Jun/July 2021)	Difference
Quotation	Employed	1.53	2.76	+1.2
Quotation	Subcontractors	0.46	0.44	-0.02
Installation	Employed	3.63	3.80	+0.17
Installation	Subcontractors	2.86	3.80	+0.94
Quality control	Employed	0.81	1.04	+0.23
Quality control	Subcontractors	0.08	0.09	+0.01
Administration	Employed	2.2	2.59	+0.39
Administration	Subcontractors	0.05	0.03	-0.02

Source: Ipsos, survey of installers, all existing businesses, base (209). Question B13: "In the 12 months before your business's involvement in the Scheme, how many staff were involved in the delivery of the measure(s) you are providing through the Scheme?" and question C10:

"Thinking about the staff who were involved in the delivery of the Green Homes Grant Voucher Scheme just before the announcement was

⁴³ The average is calculated across all existing businesses, base (209).

made on 27th March 2021 that the Scheme would close to new applications on 31st March 2021. How many staff were involved in the provision of [relevant measures]?”.

On average, installers increased permanent staff across different roles, with the greatest number being taken on for quotation and for installation subcontractors (see grey-shaded cells in Table 5.1). Most of the installers participating in qualitative interviews (11 out of 17) also reported that they had already hired or were in the process of hiring new staff – both administrators and installers – in anticipation of a surge in work from the Scheme. Firms participating in both the qualitative and quantitative research had to increase employees in quotation functions to meet the surge in customer requests for quotations during the first months of the Scheme. (To note: the higher volume of quotes did not necessarily lead to a higher number of jobs, as not all jobs were eligible for the Scheme, or customers did not always follow through on their requests).

One of the adverse consequences of the Scheme closing earlier than anticipated was that, amongst those who hired additional staff, some had to lay off or furlough employees. This fact emerged during the qualitative interviews with installers and spontaneous feedback given by some installers invited to participate in the installer survey.

5.5.3 Installer training

Installers participating in qualitative interviews demonstrated low awareness of the training or expressed that they did not need training because they already held all necessary certifications. Despite this, Certification Bodies reported significant demand for certification ahead of and during the early stages of the Scheme, as installers rushed to meet the standards required to install measures under the GHGVS and other BEIS Schemes.

The installer telephone survey highlighted that, amongst those who gained any of the necessary accreditations in order to participate to the programme, the average number of people attending training⁴⁴ was 1.61 staff and average out of pocket expenditure for training (e.g. on training fees, hiring external trainers, paying for training materials) was £5,026.⁴⁵

Training was harder to access during lockdown, with in person training not able to take place. This meant that some training launched by BEIS to support its retrofit programmes was delayed. An evaluation of the Training Skills Competition is being carried out separately from this current evaluation.

5.5.4 Preparations made by manufacturers, trainers, auditors and certification bodies

Companies in the broader supply chain also responded to the Scheme by hiring additional staff or investing in training. In general, the Scheme had a non-uniform impact on different parts of the supply chain and was perceived by the various business types in different ways.

⁴⁴ This was retrofit training in general – to cover all retrofit schemes and not just the GHGVS.

⁴⁵ Average number of employees trained is derived from question D3 and average amount spent from question D5 of the survey of installers, base (135) and (69) respectively of all who gained any certification at D1.

- None of the manufacturers interviewed for this evaluation reported any job retention or increases in their workforce linked to the Scheme in any way. However, two manufacturers reported having invested in training and marketing for the Scheme, which they ultimately considered as a ‘sunk cost’.
- On the other hand, certification bodies hired full-time staff between the autumn of 2020 and spring 2021 and this growth in demand was in part attributed to the Scheme. Outside of the scope of full-time employees, another certification body reported that they hired ‘a handful’ of employees during this six-month period; however, they had to furlough all new full-time employees because their members’ vouchers were being rejected and the additional installers they were expecting to join held-off due to Scheme-related issues.
- Likewise, training providers hired new employees due to the Scheme and considered this as a significant increase to their existing renewable and energy efficiency installation training services.
- All three auditing organisations contacted had increased the number of employees at their business over the six-month period prior to the interviews in February 2021. One business employed five new assessors and auditors, another hired two desk-based compliance auditors and the remaining business employed a new administrator to help cope with the additional paperwork and intended to recruit more auditors. Two auditors reported that this growth in employment was at least in part due to the demand created by the GHGVS. The other interviewee attributed their increase in employees to other Schemes such as the Social Housing Decarbonisation Fund Demonstrator, GHG-LAD and ECO.

5.6 Quotes

Within the first three months of the GHGVS, installers experienced a surge in the number of quotes they received compared to business as usual. Installers participating in the telephone survey reported that average number of quotes conducted since the launch of the Scheme more than doubled compared to pre-Scheme levels.

5.6.1 Average number of quotes before and after the start of the Scheme

	Twelve months before the Scheme	Since registering in the Scheme
Quotes	860	1,888

Source: Ipsos, survey of installers, all existing businesses base (209). Question; B10” In the 12 months before your business’s involvement in the Scheme, how many quotations did your business provide?” and question C4: “Since [date of registration] how many quotations has your businesses provided for [relevant measures]?”.

Installation companies do not usually charge for providing quotes, with the cost of speaking to customers and providing quotes covered as part of the company overheads / cost of the installation (where quotes lead to actual jobs). A rapid increase in quotes was initially welcomed by installation companies, who were anticipating increased interest from customers and who expected the quotes to materialise into (more) work. However, for small companies, it was very challenging to deal with the large number of requests (especially when these were not guaranteed to lead to paid jobs), which may be reflected in the increases in numbers of quotation and administration staff reported by installers (see above).

It was also notable that one applicant completing the qualitative interviews reported needing to pay for quotes (see section 4.7).

5.7 Installing measures

The installer telephone survey asked about the average number of installations by group of measures in the 12 months prior to the Scheme, as well as under the Scheme. As the Scheme covered only a six-month period and as – during that period – installers are likely to have continued to install measures outside of the Scheme, it is not necessarily surprising that the average number of installations through the Scheme is lower than the number for the full year prior to the Scheme (see Table 5.2). However, this may also indicate that the Scheme has not had the anticipated effect on raising the average number of installations in properties.

Table 5.2: Average number of installations before and as part of the Scheme

	Twelve months before the Scheme	As part of GHGVS
Average number of total installations by responding business	379	50
Average number of insulation measures by responding businesses	387	100
Average number of low carbon heat measures by responding businesses	378	20

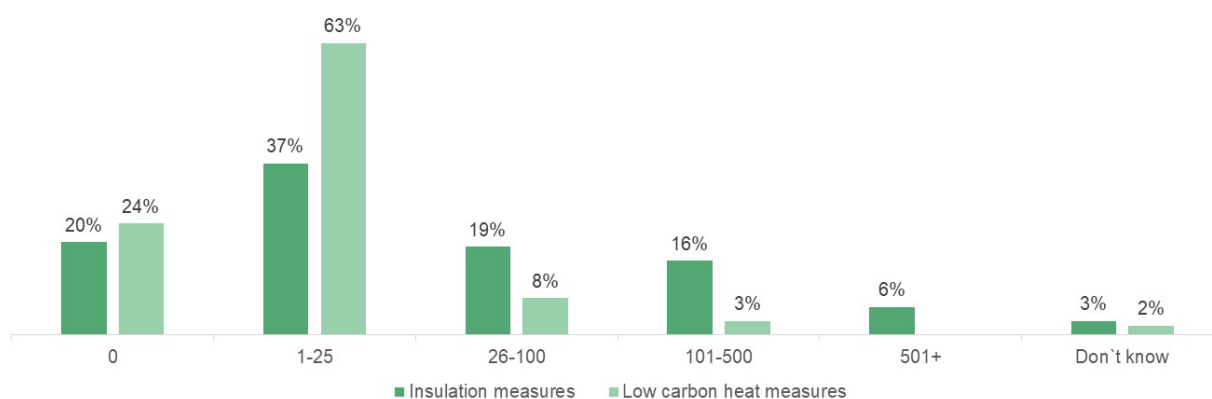
Source: Ipsos, survey of installers, all existing businesses base (209) and all respondents (218). Question B11: “In the 12 months before your business’s involvement in the Scheme, how many installations did your business provide?” and question C5 “As part of GHGVS how many installations has your business completed of [relevant measures]?”.

Figure 5.6 presents a breakdown of the number of measures installed as part of the programme, by measure type, as reported by installers in the telephone survey. Among registered installers offering these types of measures, the most common number of measures installed was 1-25 (reported by 37% of those offering insulation measures and 63% of those

offering low carbon heat measures). Installers of insulation measures tended to report more installations, in line with Scheme data which showed that installations of insulation measures numbered more than five times the number of installations of low carbon heat measures (see Table 4.3:). Only 3% of installers of low carbon heat measures reported having installed more than 100 measures.

In addition, a fifth of installers of insulation measures and a quarter of installers of low carbon heat measures said they had not completed any installations as part of the GHGVS.

Figure 5.6: Number of measures installed since registration in the Scheme by measure type



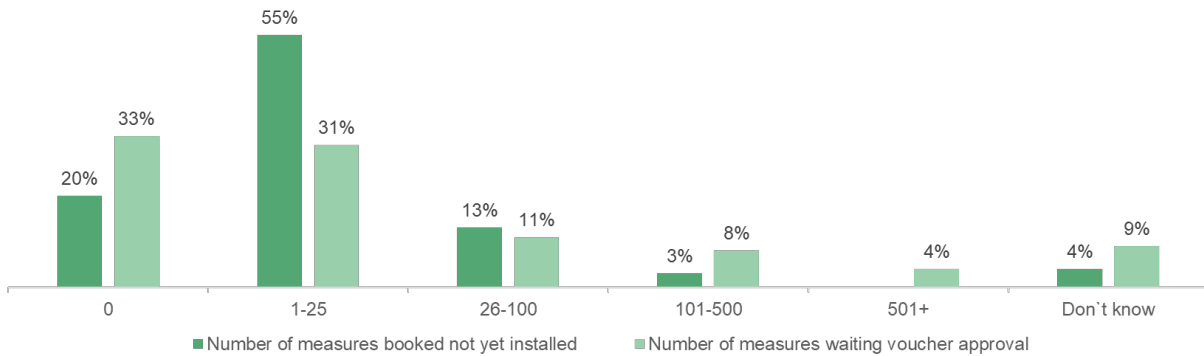
C5. As part of GHGVS how many installations has your business completed of [relevant measures]?.
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: all installers offering insulation measures (90), and low carbon heat measures (150).

Related to the delays with application processing, Figure 5.7 shows the number of measures that were still waiting for a voucher to be issued or yet to be installed at the time of the telephone survey.⁴⁶ While a fifth of installers said that they were not waiting to schedule any installations, and a third said they were not waiting for any vouchers to be issued, there were still significant delays reported. While only 16% of installers said they had scheduled 26 or more installations, 23% stated they were waiting for 26 or more vouchers to be issued, and this included 4% who said they were waiting for 500 or more vouchers to be issued. This 4% waiting for a very large number of vouchers to be issued drove up the average number of voucher issuances awaited, as reported by installers. On average, installers reported that they had 18.1 installations scheduled, but were waiting for 93.1 vouchers to be issued.⁴⁷ This ties in with qualitative and quantitative evidence from installers and applicants that indicates that backlogs of processing voucher applications caused significant delays to the market.

⁴⁶ The telephone survey fieldwork was completed in June/July 2021.

⁴⁷ Note that the installer survey referred to 'application approval', whereas scheme data refers to vouchers issued. In our analysis these amount to the same thing, though due to differences in timing between the date of the installer survey running and the scope of scheme data analysed for this report there are differences in figures.

Figure 5.7: Number of measures that installers reported as awaiting voucher issue⁴⁸ or installation



C8. As part of Green Homes Grant Voucher Scheme how many installations has your business got booked in or scheduled by not yet installed / are awaiting approval of [relevant measures]?⁴⁸
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: All installers (218)

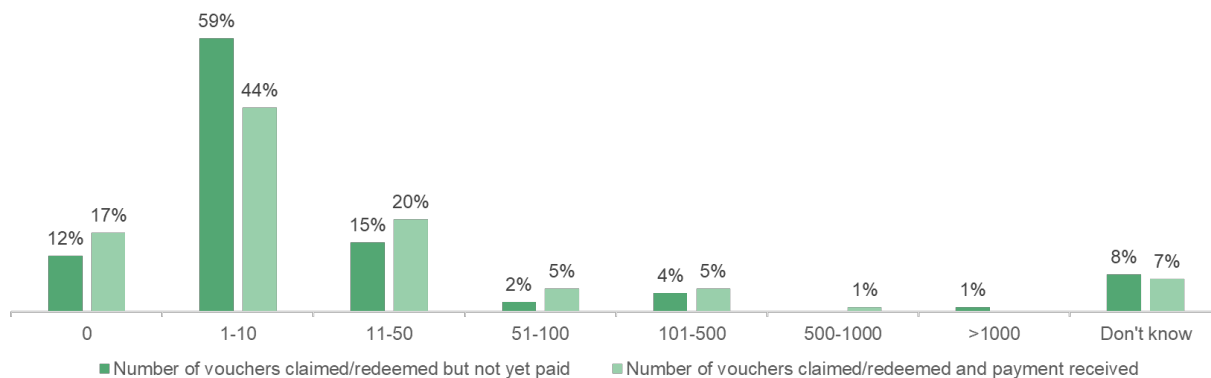
5.8 Voucher redemption and close-out

Amongst the 164 installers participating in the telephone survey who had completed at least one installation by the time of the survey, the average turnover through the Scheme was £259,000.

However, some installers reported delays in receiving payments through the Scheme after vouchers had been redeemed by applicants: 17% of installers who had conducted at least one installation at the time of the survey had not yet received payment for any of this work, and 80% had at least one voucher with outstanding payment (though the survey did not ask for how long they have been waiting for payment). The average number of vouchers awaiting payment amongst installers who had completed at least one installation was 34 at the time of conducting the installer survey.

⁴⁸ The installer survey referred to 'application approval', whereas scheme data refers to vouchers issued.

Figure 5.8: Voucher redemption and payment



C6. For how many installations has the voucher been claimed, but not yet redeemed or paid? And for how many installations has the voucher been redeemed: by that I mean your business has been paid for the installation?
 Source: Green Homes Grant Voucher Scheme Installer Survey
 Base: All businesses who have completed installation of at least one measure (164)

The data from the installer survey suggests that the voucher redemption process impacted negatively on their business cashflow. When asked, 72% of installers said they were dissatisfied with the impact of the GHGVS on their business cashflow, including 51% who were very dissatisfied; only 16% said they were satisfied.

5.9 Next steps for the supply chain – their views on future Schemes

5.9.1 Installers

Installers participating in qualitative interviews said they perceived the Scheme to be a failure in many respects despite praising the Scheme concept as conducive to new business for the whole sector. Retrofit companies were not able to fully benefit from the incentives created by the Scheme due to the issues experienced during delivery. The Scheme’s lack of success was mainly attributed to its initial short-term nature and the need to coordinate with the wider supply chain before the launch of the programme. There was consensus among installers regarding three key aspects to be considered for the implementation of future Schemes:

Involvement of the supply chain: Installers stressed the desire to be consulted by the Government prior to the design of a similar programme in the future and that more time is allocated to select the most appropriate delivery model.

Long term planning: In future, they considered that similar Schemes should run for longer than six months (at least 3 years), to allow the supply and demand side to fully engage with it. Installers felt that the time that was given to them to become compliant, hire additional staff and operationalise the entire process (from quote submission until vouchers’ redemption) was

not enough. Moreover, the original allocated timeframe,⁴⁹ did not allow new businesses in this sector to properly develop and increase the supply of low carbon heat and energy efficiency measures.

Refine the enrolment process: Installers suggested to refine the enrolment process, making it easier and clearer (especially around the necessary PAS certifications) from the start. In many instances, installers felt that the Scheme delivery officers 'did not have the clue of what they were doing' and consequently lost confidence in the programme.

5.9.2 Manufacturers, trainers, auditors, and certification bodies

Manufacturers, training providers, auditors and certification bodies highlighted the Scheme's design and administrative challenges as its greatest shortcomings. As a result, they largely regarded the Scheme to have failed against its major objectives. Whilst some businesses saw a major surge in demand directly attributed to the Scheme, they still considered it to have had no significant or lasting positive impact on their business or the sector. The only positive impacts noted were short-term demand generation for some businesses and increasing consumer awareness. On the other hand, most businesses identified net negative impacts of the Scheme, including sunk costs on marketing and preparation, disruption to the market, contravening the lessons from past failures and failing to align with EPCs and PAS 2035. The claimed failure, lack of positive impact and net negative impacts were attributed these major factors:

Short-term nature of the Scheme: The short-term nature of the Scheme was not felt to be aligned with the long-term nature of business and was considered as a critical oversight, as businesses from across the supply chain stated they would not base their growth, investment, or employment on a short-term Scheme. Additionally, even if businesses had the capacity and/or decided to scale up, the timelines were deemed unrealistic to meet the scale of the ambition as multiple parts of the supply chain would be overwhelmed and create bottlenecks. Furthermore, contrary to its intended outcomes, it was felt that a short-term Scheme is more conducive to poor installations and unscrupulous traders and does not encourage good quality installers.

Administrative failure: The Scheme suffered from multiple critical processes not functioning adequately, including major delays, a lack of communication with installers and customers on voucher progress and payment, as well as guidance on how businesses could prepare for the Scheme. Businesses interviewed advocated for the need to reduce friction and encourage uptake by removing the burden of administration away from customers. This would require an automated and user-friendly customer journey all in a single process, covering application, installer quoting and booking, claiming and payments.

⁴⁹ The scheme closure after 6 months.

5.9.3 Future Schemes and next steps

Several of the supply chain businesses interviewed for this evaluation suggested other mechanisms should run alongside or instead of this Scheme:

Legislation or policies to make retrofit compulsory: This could be supported by a tax or levy to cover the cost of the retrofit (while a grant Scheme would target the fuel poor).

A flat grant as a percentage⁵⁰ of the cost of the system: This would be without requiring means-testing or other administration or policing process. Another variation of this proposal was a VAT cut on costs of all retrofit goods and installation.

Tax system: Shift the burden of taxation away from electricity to gas to encourage electrification of heat.

5.10 Chapter conclusions and next steps for the evaluation

This Chapter provided an overview of the Scheme as it was experienced by installers and the wider supply chain (manufacturers, certification bodies, trainers and auditors). It described the type of businesses participating into the Scheme and provided details on how they became aware of it and what actions they took in preparation of the programme, including recruitment of additional staff. The Chapter also gave some evidence of the certifications held before and after the launch of GHGVS, as well as the number of quotes and installations conducted since businesses registered in the Scheme.

The Chapter concluded with some important views of the installers and the wider supply chain on how future programmes aimed at increasing energy efficiency for the general public should be designed and improved.

⁵⁰ For example 10%.

6 Conclusions

This section summarises our conclusions from this process evaluation, presented in line with the overall evaluation questions (summarised in Annex 1 of this report):

Overall Scheme delivery

- Awareness of the Scheme appears to have been fairly high, both among installers and the general public. Applicants, non-applicants, and installers all reported multiple sources of awareness. However, the Scheme's reach was lower than it could have been: the Scheme had funding able to benefit around 600,000 homes,⁵¹ but applications were made for only 113,739 properties.
- A total of 57% of all those who applied for vouchers did so through the low-income Scheme. The profile of participants in the applicant survey indicates that the low-income Scheme includes a high proportion assessed as likely to be in fuel poverty (54% vs. 25% on the main Scheme), which suggests that the targeting of the Scheme has been successful in encouraging fuel poor households to participate.
- Based upon the qualitative research, but also responses to the applicant survey from applicants considering cancelling installations or experiencing delays in installation, Covid-19 seems to have had little effect on either applicants or the supply chain's willingness or ability to participate in the Scheme.
- There is evidence, both from applicant satisfaction and independent auditors, that the quality of installations has generally been high and that this is likely to have been driven by Scheme design (particularly through installer accreditation/certification – where 61% of installers reported gaining at least one accreditation to participate in the Scheme).

Applicants and non-applicants

- Considering barriers, challenges, and enablers:
 - Barriers to uptake reported by non-applicants included: financial concerns around upfront costs (even after vouchers were applied) and perceived long payback periods; confusion over figures presented on Scheme and/or eligibility criteria; perceived level of disruption involved in installation; lack of perceived need for measures; and perceived high effort and difficulty involved in identifying appropriate measures and searching for installers.
 - Challenges expressed by applicants to the Scheme included clarity of whether vouchers could be used alongside other funding; specific administrative issues for landlord applicants; lack of installer availability; delays to voucher issuance and poor communication from Scheme administrators.

⁵¹ September 2021 NAO Report: <https://www.nao.org.uk/wp-content/uploads/2021/09/Green-Homes-Grant-Voucher-Scheme.pdf>

- Enablers for the Scheme, expressed by applicants, included general clarity of information about the Scheme (excepting the point mentioned above); general clarity of the application process; the process for redeeming vouchers; and the overall concept of the Scheme.
- Overall experiences of the Scheme were mixed. The applicant survey found a roughly even split between applicants reporting overall satisfaction and overall dissatisfaction with the Scheme. However, the survey found that most applicants whose installations were complete by the time of the survey were satisfied with their new installation; a finding reflected in the qualitative research.

Installers and supply chain

- Considering the profile of participating installers, most (96%) of those surveyed were businesses already in operation before the start of the programme, only a small number were companies or subsidiaries set up for the purpose of delivering the Scheme and around two thirds were micro businesses with fewer than ten employees.
- In terms of capacity to participate in the Scheme, qualitative evidence suggests that overall, installers had some capacity issues, as did some areas of the supply chain, but other areas (e.g. training, certification, some manufacturers) did not.
- In terms of willingness to participate, there is evidence that installers were initially enthused about the Scheme and keen to participate. However, experiences of participation have generally been negative, with installers (and manufacturers) being highly critical of the administration of the Scheme including delays in getting vouchers issued and delays in vouchers being redeemed (e.g. 17% of surveyed installers who had completed at least one installation were yet to have a voucher redeemed). By early August 2021, a small number of installers (4%) were waiting on over 500 vouchers to be issued each. This backlog in issuance appears to be having a significant impact on businesses' finances and their appetite for the Scheme.
- More than half (54%) of all installers participating in the survey said they were very dissatisfied with the Scheme (only 21% were at all satisfied). In other qualitative work completed, other parts of the supply chain, particularly manufacturers, were also highly critical of the Scheme.
- The Scheme seems to have supported the creation of jobs to some extent (typically for quotation and administration roles), but these jobs do not appear to be necessarily sustainable beyond the Scheme delivery. Increased capacity for installation roles has been seen more in sub-contracted work than direct employment. There is also evidence that some installers have laid off staff due to negative experience of the Scheme and the impact on their company finances.
- Considering training, qualitative research with installers suggests that training resources offered within the Scheme were under-utilised, either because of a lack of awareness or because these were deemed unnecessary, especially among companies that already held all necessary certifications.

Cost effectiveness and future policies

- Applicants raised potential issues about installer wrongdoing and installers overcharging. In the case of the latter this may have been – in at least some cases - due to legitimate reasons for installers charging more under the Scheme than simply profiteering.
- An initial analysis of cost data (compared to industry averages) has found that the costs incurred for installing GHGVS measures are broadly comparable to the industry averaged costs with no divergence of considerable magnitude. Although the cost of installing insulation measures under the GHGVS appears to be slightly higher than the industry averages, the cost of installing low carbon heat measures appears to be overall comparable to these.

Annex 1: Summary of findings against evaluation questions

Theme	Evaluation question	Summary of findings	Link to report
Scheme Delivery	<ul style="list-style-type: none"> What has been the awareness, take-up and engagement by the public and installers under the Scheme? 	Awareness appears to have been fairly high, but the number of applications received was significantly lower than the amount for which budget was available.	Chapters 3 and 4
Scheme Delivery	<ul style="list-style-type: none"> What is the demographic make-up of applicant households? 	57% of applicants applied to the low-income Scheme. More than 90% applied for houses, 5% for flats/maisonettes and 2% for park homes.	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> How effective has the Scheme been at encouraging applications (and take up of installations) by low-income or fuel poor households? 	Effective - 57% of applicants applied to the low-income Scheme. The analysis of Scheme coverage amongst those identified as likely to be fuel poor also suggests the Scheme was effective at reaching this group.	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> What has been the impact of Covid-19 on deliverability of the Scheme for consumers and the supply chain? 	Qualitative and quantitative research amongst applicants indicates that Covid-19 has had very little effect on either applicants or the supply chain's willingness or ability to participate in the Scheme.	Chapters 3 and 5

Theme	Evaluation question	Summary of findings	Link to report
Customers and Applicants	<ul style="list-style-type: none"> • What were the enablers and barriers to referrals, applications and installations? Who did this affect? 	The main barriers have been the ability to identify installers, and concerns around the disruption the installations would create, as well as concerns that it would still not be financially viable / worthwhile to invest in an installation.	Chapters 3 and 5
Customers and Applicants	<ul style="list-style-type: none"> • To what extent do consumers and landlords have a positive experience (engagement, assessment, installation and usage), and how is this influenced by the Scheme design? 	Consumers and landlords had mixed views of the Scheme. There was an almost even split of satisfied vs. dissatisfied applicants amongst those surveyed, with degree of satisfaction correlating closely with whether the applicant's installation was complete by the time of survey.	Chapter 3
Installations	<ul style="list-style-type: none"> • Is the Scheme delivering the number and type of installations originally expected? 	No – it only received applications for 19% of the number of households it had budget to support.	Chapter 4
Installations	<ul style="list-style-type: none"> • What has been the quality of installations under the Scheme? 	Quality has been overall good.	Chapter 4 (section 4.6)
Installations	<ul style="list-style-type: none"> • Are there other measures installed as a follow up to these installations? 	There is emerging evidence that other measures might be installed as follow-up measures by GHGVS-participating households.	Chapter 4 (section 4.5)

Theme	Evaluation question	Summary of findings	Link to report
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • Does the energy efficiency / low carbon heating installer market have the capacity/ willingness to participate in these projects? 	<p>Qualitative evidence suggests that, overall, installers had some capacity issues in participating in the projects, as did some areas of the supply chain, but that other areas (e.g. training, certification, some manufacturers) did not.</p>	Chapter 5
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • What are the characteristics of the installer firms engaging with the Scheme? 	<p>Most installers were businesses already in operation before the start of the programme, only a small number were companies or subsidiaries set up for the purpose of delivering the Scheme and around 2/3 were micro businesses with fewer than employees.</p>	Chapter 5
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • How is the Scheme supporting the creation and retention of energy efficiency/ low carbon heating jobs across the supply chain? 	<p>The Scheme has supported the creation of jobs to some extent, but these jobs do not appear to be necessarily sustainable. Also, there is some evidence from qualitative interviews and feedback on the installer survey of firms laying staff off due to their experience of the Scheme.</p>	Chapter 5

Theme	Evaluation question	Summary of findings	Link to report
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • How has any additional installer training interacted with the capacity required for the Scheme and supported the skills installers needed to deliver quality installations? 	<p>Qualitative research with installers suggests that training resources offered within the Scheme were under-utilised, either because of a lack of awareness or because these were deemed unnecessary, especially among companies that already held all necessary certifications. However, the installer telephone survey highlighted that among those who gained any of the necessary accreditations in order to participate to the programme, the average number of people attending training was 1.61 staff and the amount spent for training was £5,026.</p>	Chapter 5
Cost Effectiveness and Future Policies	<ul style="list-style-type: none"> • What are the costs incurred for installing energy efficiency/ low carbon measures in homes? How do these costs compare with industry averages? • Is the Scheme being delivered in way that represents value for money? • To what extent has there been any inflation of costs under the Scheme? 	<p>These questions will be answered in the next stage of the evaluation.</p>	N/A

Theme	Evaluation question	Summary of findings	Link to report
	<ul style="list-style-type: none"> • What are the critical success factors and barriers behind the delivery of this Scheme? • How did the voucher Scheme interact with other BEIS Schemes? What was the extent of duplication of funding? Were similar installers used for other stimulus Schemes? 		
<p>Cost Effectiveness and Future Policies</p>	<ul style="list-style-type: none"> • To what extent has the Scheme been affected by fraud and gaming? How effective was the Scheme at minimising potential fraud and gaming? 	<p>There is some evidence of fraud and gaming emerging from the qualitative research. The extent to which the Scheme was effective at detecting and deterring this will be investigated in more detail in the outcome evaluation, once all installations have been completed.</p>	<p>Chapter 4 (section 4.7)</p>

Annex 2 Review of the theory of change

The GHGVS theory of change (ToC) was developed in November 2020 in a workshop of policy colleagues organised and led by BEIS. Ipsos and BRE attended as observers and ‘critical friend’ facilitating the ToC’s development. During the workshop, focus was given to formulating the anticipated outputs, outcomes and impacts into a plausible causal pathway and to setting the assumptions. The output of this activity was a detailed logic model with targets, causal pathways, and a long list of assumptions.

As the ToC has not been published, it is not presented in this Report. However, as part of this Review, each of the stated assumptions of the ToC are set out and assessed below. At the beginning of the outcome evaluation, the assumptions will be discussed in further detail and revised assumptions and causal pathways outlined, along with the lines of investigation to be covered in the outcome evaluation. (It was not within scope of the process evaluation to revise the assumptions at this stage).

Key findings

The GHGVS ToC is evaluable as it is clear, largely comprehensive and represents a consistent view from within BEIS. However, it is lacking some detail that would facilitate evaluation, including: greater clarity on the causal assumptions, the role of stakeholder and beneficiary behaviour and other contextual factors, and the Scheme’s complexity (and the implications of that for evaluation).

On this basis, Ipsos have identified a number of immediate next steps to facilitate the set-up of the outcome evaluation.

ToC evaluability

ToCs are central to understanding and evaluating interventions – particularly when an analysis of intervention impact is required. This is because ToCs set out the assumptions – or hypotheses – around how an intervention is expected to cause or contribute to a particular positive change, which then forms the basis for evaluation (i.e. evaluations test these hypotheses). It is therefore important that ToCs are sufficiently comprehensive and reflective of the intervention’s strategy to enable evaluation. The ‘evaluability’ of a ToC (and – by extension – the intervention) can be tested following a nine-point checklist developed by Davies (2013)⁵², as set out in Table A2.1 overleaf. The GHGVS ToC is evaluable to the extent that it is clear, largely comprehensive and represents a consistent view from within BEIS. However, it is lacking some detail that would facilitate evaluation, including: greater clarity on the causal

⁵² Davies, R. (2013.) Planning evaluability assessments: A synthesis of the literature with recommendations. Working Paper 40. London: UK Department for International Development

assumptions, the role of stakeholder and beneficiary behaviour and other contextual factors, and the Scheme’s complexity (and the implications of that for evaluation).

Table A2.1 GHGVS ToC evaluability

Theme	Finding
Clarity / testability	The long-term impact and outcomes are clearly identified. A large list of ‘assumptions’ is stated, which sets out the risks / barriers to progression. However, the causal pathways / causal assumptions (i.e. how the intervention will affect change rather than (only) the potential barriers to it) could be much more explicit.
Relevance	The relevance of the GHGVS’ objectives (i.e. target outcomes and impacts) is evident in the ToC, as they align with the ‘rationale’ which is also clearly set out in the ToC.
Plausibility	The causal chains are plausible (based on existing evidence of how results such as energy efficiency, fuel poverty reductions etc. can be achieved) and risks to achievement have been considered and are set out in the list of assumptions. However, there do appear to be risks / assumptions missing.
Validity	The ToC sets potential outputs and outcomes for the programme based upon the budget that was available at the time of designing the Scheme. However, BEIS have stated that these should not be considered targets against which ‘success’ should be measured. Instead the focus is on validating the causal assumptions underpinning the Scheme. Some of these assumptions are documented in the ToC but others have had to be retroactively identified through discussions with BEIS.
Contextualisation	The behaviours of beneficiaries and stakeholders, as well as contextual factors that influence is covered to some extent in the list of assumptions and some elements of the ToC diagram, but these other factors could be made more explicit.
Consistency / agreement	As the ToC was developed collaboratively with different representatives from relevant teams in BEIS, the evaluation team assume it is largely consistent of BEIS’ view. The extent to which the ToC aligns with stakeholder and beneficiaries’ experiences of the Scheme is being investigated through this evaluation.

Theme	Finding
Complexity	GHGVS operates in a complex policy and societal context, with e.g. multiple policies affecting the same outcomes and other factors (including stakeholder behaviours and market behaviour, as well as Covid-19) having a major effect on anticipated change. The ToC begins to identify aspects of this complexity, but it isn't formulated explicitly.

Validity of the causal pathways

This section assesses the extent to which the ToC is valid, based upon evidence collected in this process evaluation – i.e. the extent to which the Scheme has been implemented (and has started to achieve its objectives) as anticipated. The remainder of this section is structured around the seven outcomes of the ToC visual.

As set out in the next Annex (on methodology), the focus of the process evaluation was on process evaluation and answering the process evaluation questions around Scheme delivery, coverage, initial results and applicant and stakeholder experience. In preparation for the outcome evaluation which follows in the outcome evaluation, this Report here collates the information gathered through the process evaluation to conduct an initial assessment of the validity of the causal pathways that will feed into the design of the outcome evaluation (i.e. the refinement of the ToC, hypotheses to be tested and lines of investigation).

Energy efficiency improvements

Chapter 4 describes the Scheme data (as well as findings from the applicant survey around installations) and the extent to which these met targets set for homes retrofitted and more energy efficient. Estimates of the Scheme's contribution to household energy efficiency, bill savings and CO2 emissions reductions will be calculated in the outcome evaluation. However, as set out in Chapter 4, the Scheme has only been able to achieve coverage of around 19% of the number of households that it was able to support (with 113,739 households applying for the Scheme).

In terms of the Scheme increasing interest in / understanding of energy efficiency for consumers outside of the Scheme, there is some evidence (presented in section 4.5) of the Scheme influencing follow-on behaviours. This will be investigated in much more detail in the outcome evaluation.

In terms of attracting applicants to the Scheme, the findings from the process evaluation suggest that the Scheme was well-publicised and well-known amongst the public (though some misconceptions may have prevented some from applying). The main challenges appear to have been around the systems facilitating applications, ability to access installers, some of the press around the Scheme, and concerns around payback from the installations. These potential barriers were already foreseen in the ToC (see below).

Low carbon heat growth

The extent to which the Scheme helped to grow specific low carbon heat markets will be investigated in the outcome evaluation. The Scheme has certainly encouraged the installation of some of these measures: four fifths (80%) of those applying for solar thermal said they would have been unlikely to install without the Scheme, and 69% said this about air source heat pumps. The significance of this compared to the baseline situation will be further assessed in the outcome evaluation.

Decreased fuel poverty

The effects of the programme on mitigating fuel poverty will be investigated in greater detail in the second version of this Report and in the final stage of the outcome evaluation (when all installations will have been complete and beneficiary households will have gone through a heating season). However, as set out in Chapter 3, the Scheme has been fairly effective in reaching fuel poor and lower income households. Over half (57%) of all applicants accessed vouchers through the low-income Scheme. This was open to people in receipt of at least one eligible benefit. BEIS have expressed an interest in understanding the extent to which this criterion was effective at bringing on board people in fuel poverty / with a low-income. This will be investigated, where possible, in the outcome evaluation.

Increased employment and improved skills

The number of jobs supported and created will be assessed in the outcome evaluation; however, the qualitative evidence collected suggests that for the Scheme was not overall effective at supporting sustainable job creation as, whilst installation firms did hire new staff, particularly to cover the increased admin, these jobs were short-term. Further, other firms ended having to lay off staff because of the negative effects of participation in the Scheme on the companies' finances. Also, training resources offered within the Scheme were not always taken up, either because of a lack of awareness or because these were deemed unnecessary, especially among companies that already held all necessary certifications.

Four of the eight certification bodies interviewed had hired one to eight full-time employees between the autumn of 2020 and spring 2021. A fifth certification body hired 'a handful' of temporary employees.

Improved quality standards

Our emerging findings do seem to suggest that the requirement for accreditations within the Scheme drove high standards of quality and that it may have a positive – and sustained – impact on quality given that the Scheme did encourage installers to acquire PAS, MSC and TrustMark accreditations. Our installer survey revealed that 61% of respondents had gained one of these accreditations to participate in the Scheme and our interviews with auditors suggested that such accreditations have improved the quality standards of installations.

Market improvements

The effects of the Scheme on the supply chain will be investigated in the outcome evaluation. It is not possible at this stage in the evaluation to state whether the Scheme encouraged market competition, increased awareness of new technology and/or increased the cost of measures. At this stage, on market competition, it is only possible to say that (based upon the installer survey and qualitative work), most companies participating in the Scheme were SMEs; however, a fuller analysis of the structure of the market will be undertaken for the outcome evaluation.

Validity of the assumptions

Table A2.2 overleaf provides analysis of the validity of the ToC's assumptions based upon the evaluation's evidence.

Table A2.2 Validity of the ToC's assumptions

Assumptions listed in the ToC	Extent to which the assumptions were valid
Demand not affected by unwillingness to go ahead with installations in the light of Covid-19 or adverse publicity about the Scheme	Good validity: Based on interviews with applicants, it appears that Covid-19 did not prevent people from applying to the Scheme, though the early 2021 lockdown did prevent some people from selecting specific installations and created delays to the Scheme. Some applicants interviewed were concerned about aspects of the Scheme, having spoken to installers and learned about non-payment of vouchers. However, the evaluation hasn't uncovered evidence of these directly deterring potential applicants from applying to the Scheme nor of them deterring successful applicants from completing their installations.
Cost rises do not take place as a result of increased demand	Validity uncertain: Evidence from this process evaluation indicates that cost rises did take place – not due to increased demand – but due to the costs to installers of meeting the Scheme's requirements (e.g. on PAS and TM / MCS registration). This appears to have had some impact on some applicants' choice of installer and their satisfaction with the Scheme.
Supply not affected by future Covid-19 restrictions	Validity uncertain: Supply within the construction trade at large has been affected by EU exit. However, none of the installation nor non-installation businesses (i.e. manufacturers, certification bodies, training providers and auditors) interviewed considered their businesses (which constitute the upstream supply chain) to have been significantly or lastingly damaged by either the Initial lockdown or economic impacts of the Covid-19 pandemic.
TrustMark, certification bodies for PAS and MCS are able to scale up (systems and dispute resolution mechanisms) before and during the live Scheme	Good validity: All certification bodies reported that they were willing and able to scale up to meet the demand for certification during the Scheme and if it should increase in future.
Installations will be completed in enough time for vouchers to be redeemed	Validity cannot be judged: Whilst the Scheme ended in March 2021, the period for installations to be completed and vouchers redeemed was extended. The analysis set out in Chapter 4 of this Report has not been able to conclude

Assumptions listed in the ToC	Extent to which the assumptions were valid
	<p>whether this will be sufficient time for vouchers to be redeemed. Factors preventing installations from being completed appear to be: installers pulling out from a fear of not being paid/financial risk, applicants withdrawing / getting their installation completed outside of the Scheme, and delays driven by the supply chain / household-specific factors.</p>
<p>Installers will not face a loss of investment due to the Scheme</p>	<p>Invalid: There is some evidence coming through this process evaluation of installers facing a loss of investment from the Scheme e.g. in terms of layoffs of staff. This will be further investigated in the outcome evaluation.</p>
<p>Consumers will not face a loss of investment due to the Scheme</p>	<p>Good validity: There is no evidence coming through the process evaluation of applicants facing a loss of investment from the Scheme.</p>
<p>Quantity of installations not affected by Covid-19 lockdowns</p>	<p>Good validity: As set out above, Covid-19 does not seem to have been the main factor affecting the number of installations.</p>
<p>Applicants recognise the value of outcomes such as comfort and bill savings</p>	<p>Good validity: The meaning behind this assumption is not wholly clear – it seems to be linked to the Scheme’s coverage – i.e. an assumption that the public will see value in (and therefore apply to) the Scheme as they will consider it a driver of comfort and bill savings. Applicants appear to have been mainly attracted to the Scheme by a mixture of environmental concerns, a desire to make their home more comfortable and financial reasons (i.e. they wouldn’t have been able to afford it otherwise).</p>
<p>Scheme administrator platform is able to be up and running to the timescales</p>	<p>Invalid: The delivery of the Scheme via the Scheme administrator appears to have been one of the main barriers to its success – the platform and associated services / human resourcing was not adequate for the scale or speed at which the Scheme was supposed to be delivered.</p>
<p>Suitable training is available to build up supply chain skills</p>	<p>Validity uncertain: Manufacturers highlighted that they were investing in developing and delivering training internally as well as for external partners such as installers</p>

Assumptions listed in the ToC	Extent to which the assumptions were valid
	<p>that they rely on. Certification bodies were confident that they ‘can teach the industry specifics given the right level of initial competence and the right attitude.’ All six training providers believed that training is sufficient to provide the skills they need to deliver quality installations. However, evidence from this process evaluation seems to suggest that training was under-utilised by installers. This may have been because training rollout was delayed by Covid-19 lockdown restrictions. Therefore, it seems that suitable training may not have been sufficiently available within the timeframes of the Scheme. This will be further investigated the outcome evaluation.</p>
<p>Messages from BEIS on future policy are clear, have weight and are timely to encourage supply chain build up</p>	<p>Invalid: Businesses universally backed the need for policy consistency, clarity and stability on decarbonising the housing stock; which they felt BEIS and Government are not currently providing. With respect to the Scheme, they were particularly critical of the absence of consultation or any other formal or informal process to gain industry views. They contended that the Scheme was announced without prior warning and without an understanding of what was needed by the sector. Most upstream supply chain businesses clarified they were unwilling to respond to the Scheme or any other temporary government initiative since this would not be a prudent business decision. They based this on a recurring theme of ‘boom-and-bust’, which some manufacturers had been negatively impacted by in the past. Overall, businesses had lost a substantial amount of confidence in Government following the Scheme.</p>
<p>Owner occupiers/ landlords are prepared to contribute to costs</p>	<p>Good validity: Our evidence suggests that this is the case. Indeed, applicants were not motivated only by the cost savings of the Scheme, but also environmental concerns and a desire to make their homes more comfortable / warm.</p>
<p>The capacity exists in the training industry to supply the required amount of training.</p> <p>Training is delivered in line with industry standards.</p>	<p>Validity cannot be judged: All six training providers believed that training is sufficient to provide the skills they need to deliver quality installations. They highlighted that they also provide further support apart from the qualification, which facilitates further development.</p>

Assumptions listed in the ToC	Extent to which the assumptions were valid
	<p>However, this evaluation has not been able to fully verify this or validate this assumption.</p>
<p>Supply chain is able to build up skills in timescale required.</p> <p>Training not affected by Covid-19/lockdown</p>	<p>Validity uncertain: Only one of six training providers reported that any businesses had indicated training is causing a delay in installations, and that this has been the case for many years. They explained that trainee expectations of how long the training will take is sometimes unrealistic when compared to the reality of training to high standards. However, the rollout of the training linked to the Scheme was delayed by Covid-19 lockdown restrictions. Therefore, it seems that suitable training may not have been sufficiently available within the timeframes of the Scheme. This will be further investigated in the outcome evaluation.</p>
<p>Supply chain is able and willing to scale up numbers of quality installers, retrofit co-ordinators etc</p>	<p>Validity uncertain: All supply chain actors reported that they were willing and able to scale up to meet the demand for certification during the Scheme and also should it increase in future. However, the fact that applicants could not often identify installers with the relevant qualifications suggests there may have been a capacity issue within the industry.</p>
<p>TrustMark and MCS are able to scale up (systems and dispute resolution mechanisms)</p>	<p>Good validity: All certification bodies reported that they were willing and able to scale up to meet the demand for certification during the Scheme and also should it increase in future.</p>
<p>Supply of materials and manufacturing capacity able to meet demand without reduced quality</p>	<p>Validity uncertain: The Scheme generated imbalanced demand across the manufacturing industry, overwhelming certain areas while having no impact on other areas. Manufacturers of solar thermal and some insulation types indicated that, had the Scheme been administered in a way where the intended demand was generated, and had the installer capacity theoretically existed, it would have still been impossible to service that demand within the timeline with the existing manufacturing capacity. This could have potentially created a significant negative side-effect on the quality and cost of products. Other manufacturers</p>

Assumptions listed in the ToC	Extent to which the assumptions were valid
	suggested they did not need to grow as they could meet any demand generated by the Scheme.
Installers will be qualified and will deliver installations that meet quality standards	Validity uncertain: The Scheme is having a direct impact on installers gaining accreditations that may result in higher levels of quality in installation. However, as noted above, it appears that – due to Covid-19 lockdown restrictions – the training might not have been able to scale up within the timeframes of the Scheme, and the fact that some applicants were unable to find suitably qualified / participating installers suggests that this assumption was not wholly valid.
Lower bills lead to lower emissions	Validity cannot be judged: It is not possible at this stage of the evaluation to conclude on the validity of this assumption, as this aspect of the Scheme will not be tested until the outcome evaluation.
Installer footprint will not affect the impact of the Scheme	Validity cannot be judged: The evaluation team has not, at this stage of the evaluation, drawn final conclusions on the validity of this assumption, as this aspect of the Scheme will not be fully tested until the outcome evaluation.
Customers take up primary measures and demand meets expectations	Validity uncertain: Customers have taken up primary measures, but the reach of the Scheme was less than the scope for which budget was available, as set out above and in Chapter 4. This will affect the final number of homes achieving greater energy efficiency, carbon emissions reductions from housing and job creation / retention.
There are sufficient protections, inspections and auditing to prevent poor quality installations or criminal activity.	Validity cannot be judged: It is not possible at this stage of the evaluation to conclude on the validity of this assumption, as this aspect of the Scheme will not be tested until the outcome evaluation.
Fraud and gaming are minimised by delivery body and other protections put in place (by TrustMark?)	Validity cannot be judged: The evaluation team has not, at this stage of the evaluation, drawn final conclusions on the validity of this assumption, as this aspect of the Scheme will not be fully tested until the outcome evaluation.

Assumptions listed in the ToC	Extent to which the assumptions were valid
Any regional differences in supply chain are minimised	Validity cannot be judged: The evaluation team has not, at this stage of the evaluation, drawn final conclusions on the validity of this assumption, as this aspect of the Scheme will not be fully tested until the outcome evaluation.
Quality installations will prevent health disbenefits	Validity cannot be judged: It is not possible at this stage of the evaluation to conclude on the validity of this assumption, as this aspect of the Scheme will not be tested until the outcome evaluation.
Future retrofits for consumers are not impacted by experience of the Scheme	Validity cannot be judged: It is not possible at this stage of the evaluation to conclude on the validity of this assumption, as this aspect of the Scheme will not be tested until the outcome evaluation.

Annex 3: Methodology

Evaluation scope

This process evaluation covered implementation of the Scheme from its start date of 30 September 2020 to the time of writing at the end of July / early August 2021. The Report focuses on process evaluation and answers specific questions about Scheme uptake, delivery and initial results as set out below.

Theme	Evaluation question	Link to report
Scheme Delivery	<ul style="list-style-type: none"> • What has been the awareness, take-up and engagement by the public and installers under the Scheme? 	Chapters 3 and 4
Scheme Delivery	<ul style="list-style-type: none"> • What is the demographic make-up of applicant households? 	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> • How effective has the Scheme been at encouraging applications (and take up of installations) by low-income or fuel poor households? 	Chapter 3
Scheme Delivery	<ul style="list-style-type: none"> • What has been the impact of Covid-19 on deliverability of the Scheme for consumers and the supply chain? 	Chapters 3 and 5
Customers and Applicants	<ul style="list-style-type: none"> • What were the enablers and barriers to referrals, applications and installations? Who did this affect? 	Chapters 3 and 5
Customers and Applicants	<ul style="list-style-type: none"> • To what extent do consumers and landlords have a positive experience (engagement, assessment, installation and usage), and how is this influenced by the Scheme design? 	Chapter 3
Installations	<ul style="list-style-type: none"> • Is the Scheme delivering the number and type of installations originally expected? 	Chapter 4
Installations	<ul style="list-style-type: none"> • What has been the quality of installations under the Scheme? 	Chapter 4 (section 4.6)

Theme	Evaluation question	Link to report
Installations	<ul style="list-style-type: none"> • Are there other measures installed as a follow up to these installations? • To what extent has the Scheme been affected by fraud and gaming? How effective was the Scheme at minimising potential fraud and gaming? 	Chapter 4 (section 4.5 and 4.7)
Supply Chain and Economic Recovery	<ul style="list-style-type: none"> • Does the energy efficiency / low carbon heating installer market have the capacity/ willingness to participate in these projects? • What are the characteristics of the installer firms engaging with the Scheme? • How is the Scheme supporting the creation and retention of energy efficiency/ low carbon heating jobs across the supply chain? • How has any additional installer training interacted with the capacity required for the Scheme and supported the skills installers needed to deliver quality installations? 	Chapter 5
Cost Effectiveness and Future Policies	<ul style="list-style-type: none"> • How did the voucher Scheme interact with other BEIS Schemes? What was the extent of duplication of funding? Were similar installers used for other stimulus Schemes? • What are the costs incurred for installing energy efficiency/ low carbon measures in homes? How do these costs compare with industry averages? • Is the Scheme being delivered in way that represents value for money? • To what extent has there been any inflation of costs under the Scheme? • What are the critical success factors and barriers behind the delivery of this Scheme? 	These questions were not answered at this stage of the evaluation due to the relevant data being unavailable. They will be answered in the next stage of the evaluation.

Overall approach and analytical methods

The aim of the evaluation was to answer the process evaluation questions set out above. Additionally, the process evaluation set out to understand how the Scheme was being delivered and key stakeholders experience of it to understand which aspects of the Scheme were functioning well / less well, in order to learn lessons and to refine hypotheses about how the Scheme might lead to specific outcomes being achieved.

The first step was for the evaluation team to map out the steps through which the Scheme was being delivered and the systems in place for governance and management (process mapping). A journey map for both customers (i.e. applicants) and installers that had been developed by the Scheme administrator was unpicked and set out in a spreadsheet with each step numbered. At the same time, the team reviewed web articles and other publicly available literature on the Scheme. This was to provide the team with some quick insights into potential delivery challenges already being faced, but also to provide information on processes as during the first month of the evaluation access to BEIS and Scheme administrator (for familiarisation interviews) was limited due to them being busy with rapid rollout. The findings were mapped against the step-by-step process map (in Excel) with emerging lines of inquiry being developed. At the same time, an evaluation matrix was developed which mapped the evaluation questions against sub-questions / lines of inquiry and then against the data collection methods / sources of secondary data which the evaluation team already anticipated using. This matrix was used to develop the survey questionnaire and qualitative interview topic guides.

The findings for the process evaluation were developed iteratively over nine months of work with three outputs:

- An initial Emerging Findings Note produced in early March 2021, aimed at supporting BEIS with ongoing Scheme delivery and based upon 19 qualitative interviews with installers and other members of the supply chain as well as scoping interviews with BEIS. This focussed on the Scheme experience of these stakeholders and, in particular, barriers and enablers to participation, intended and unintended effects.
- An Interim Report (delivered 31st March 2021) which provided much greater depth of findings (whilst still only drawing upon qualitative research and (some) Scheme data, as the surveys were not finalised and analysed until after March 2021). The Interim Report provided analysis of the Scheme experience by stakeholder (applicant, non-applicant, installer and auditor, trainer, certification body and auditor).
- This Final Report, which builds upon the findings of the two emergin findings reports but which provides much greater triangulation and cross-reference of findings to answer the process evaluation questions and begin to validate the hypotheses set out in the Scheme ToC.

Summary of data sources and data collection methods

Information on the numbers of interviews conducted overall are given in Table A3.1. All interviews undertaken lasted 45-60 minutes and were conducted via Microsoft Teams or telephone.

Table A3.1: Data sources for this Report

	Source	Type of data covered	Volume of data
Secondary data sources	Scheme data	Number and profile of applicants, households (incl. building type), installers & applications/ installations (incl. by type).	For all / as many as possible installations conducted to 01 March 2021
Primary data sources	Qualitative interviews with applicants (homeowners, landlords, tenants)	How became aware of Scheme, reasons for participation, confirming & understanding experience of customer journey, Covid-19 effects/other barriers, additionality/free-rider effects	41 homeowner-occupiers 15 landlords 1 tenant ⁵³ 4 applying on behalf of other people
Primary data sources	Qualitative interviews with non-applicants	Awareness of the Scheme, views on the relevance of the Scheme, barriers to (and potential motivations for) application	18 participants

⁵³ The evaluation team was only able to interview one tenant, due to the lack of this audience among applicants. Where the scheme data recognised applicants as 'people applying on behalf of someone' these were in most cases not tenants but people who applied for a relative or someone they cared for. Some reasons of why this may be the case are explained in section 3.2.

	Source	Type of data covered	Volume of data
Primary data sources	Qualitative interviews with installers	How became aware of Scheme, reasons for participation, confirming & understanding experience of installer journey (incl. training and accreditation), Covid-19 effects/other barriers.	17 ⁵⁴ installers
Primary data sources	Qualitative interviews with manufactures	Effects of GHG Scheme on service offering, amount of business incoming, growth, business capacity, turnover, staffing and skills; viewpoints on Scheme effects on quality and energy efficiency market.	11 manufacturers
Primary data sources	Qualitative interviews with certification bodies	Effects of GHG Scheme on service offering, amount of business incoming, growth, business capacity, turnover, staffing and skills; viewpoints on Scheme effects on quality and energy efficiency market.	Eight certification body representatives
Primary data sources	Qualitative interviews with training providers	Effects of GHG Scheme on service offering, amount of business incoming, growth, business capacity, turnover, staffing and skills; viewpoints on Scheme effects on quality and energy efficiency market	Six trainers
Primary data sources	Qualitative interviews with auditors	Effects of GHG Scheme on service offering, amount of business incoming, growth, business capacity, turnover, staffing and skills; viewpoints on Scheme effects on quality and energy efficiency market	Five auditors

⁵⁴ 16 installers were interviewed qualitatively between February and May 2021. One additional installer was interviewed on the 11/08/2021, was recruited on the back of the quantitative survey.

Sampling approach qualitative data collections

Qualitative interviews were conducted with four different audiences, the sampling approach for each group is detailed below.

Applicants

A total of 41 homeowner-occupiers, 15 landlord applicants, four not owning the property but 'applying on behalf of others', and one tenant were interviewed from a sample of 1,677 applicants drawn from the Scheme data supplied by BEIS. Ipsos aimed for a mix of demographics, region, application stage, measure installed and property type within the sample (see Table A3.2 below). The target for number of homeowner-occupiers and landlords was met, but only one tenant⁵⁵ was interviewed due to the number of tenants attracted by the Scheme having been low. People 'applying on behalf of someone' were most often those people applying for a relative or someone they cared for who was less able to complete the form themselves.

⁵⁵ Possible reasons behind the lack of tenants are detailed in paragraph 3.2.

Table A3.2: Qualitative interview sampling characteristics - applicants

Homeowners		Landlords	Applied on behalf/tenants	
Scheme Type	Low-income	16	2	2
	Main Scheme	25	13	3
Property type	Bungalow Detached	2	-	-
	Flat	-	2	-
	Detached	22	3	2
	Mid-Terrace	2	-	
	Semi-Detached	15	9	3
	Terraced house	-	1	
Region	Midlands	14	5	-
	North	8	5	3
	South	18	5	2
	South East	1	-	-
Measure type	Air Source Heat Pump	9	5	2
	Biomass boiler	1	-	-
	Cavity Wall Insulation	6	2	-
	External Solid Wall Insulation	6	3	-
	Flat Roof Insulation	1	1	-

Homeowners		Landlords	Applied on behalf/tenants	
	Loft Insulation	6	2	1
	Pitched roof insulation	-	-	1
	Room-in-roof	1	-	-
	Solar Thermal	10	1	1
	Under-floor insulation: Suspended floor	1	1	-
Gender	Male	22	10	5
	Female	19	5	-
Age	36-45	5	-	-
	46-55	9	5	-
	56-65	15	7	1
	66+	12	3	4
Total	41	15	5	

Installers

A total of 15-20 installers were targeted for qualitative interview in the process evaluation to understand their experience of the Scheme. Twelve contacts willing to speak to the evaluation team, were provided by the certification body CIGA and a further nine from MSC. In addition, contacts for 20 installers were provided by EST through their networks / web-searching. To reduce potential biases related to convenience sampling and to achieve greater variation among the installers recruited, some contacts were drawn from Scheme data and one contact from the installer quantitative survey. In total, 17 interviews were conducted with the profile as per the below.

Table A3.3: Qualitative interview sampling characteristics - installers

	Sub-category	#
Company size	<10	5
	<25	6
	25-50	4
	50-100	1
	100-250	1
Company structure	Delivery through own staff only	12
	Delivery through subcontractors (in addition to staff)	4
	Delivery through subcontractors only	1
Service coverage	National	5
	North	1
	North East	1
	North West	1
	South East	2
	South West	3
	South	1
	East	1
	No info	2
Company base	National	0

	North	1
	North East	1
	North West	1
	South East	6
	South West	2
	South	1
	East	1
	Wales	2
	No info	2
Measure type	Air Source Heat Pump	3
	Biomass boiler	5
	Cavity Wall Insulation	7
	External Solid Wall Insulation	2
	Flat Roof Insulation	2
	Loft Insulation	7
	Pitched roof insulation	2
	Room-in-roof	1
	Solar Thermal	5
	Under-floor insulation: Suspended floor	3

Non-applicants

Further insights on the Scheme were gathered through 18 additional interviews with non-applicants. This group was defined as individuals in need of the measures supported by the Scheme that have not applied for it. They were sampled from participants in a household survey commissioned by BEIS (also in 2020/21) on the effects of Covid-19 on households' energy use behaviour and well-being, and selected following these criteria:

- Does not have energy efficiency/low carbon heat measured installed,
- Does not reject idea of having them,
- Does not say it is not applicable or cannot be installed, or
- It's not their decision.

Sampling was conducted ensuring a good mix of region, measures needed (split in insulation measures and low carbon heating measures, demographics and property type. Research interviews were designed to capture both spontaneous and informed views of the Scheme with the following interview flow employed:

- Capturing spontaneous views of the Scheme including exploration of: awareness of the Scheme; sources of awareness; initial thoughts regarding the Scheme; spontaneous motivations or barriers for looking into the Scheme further; and any steps taken towards application.
- Exploring informed views of the Scheme facilitated by showing stimulus materials about the Scheme to allow participants to provide informed views on motivations and barriers to application. Stimulus materials were designed to provide an overview of the Scheme and simulate the initial engagement steps that a potential applicant would follow using the government website and the SEA website. They included: an overview of the Scheme; a summary of the application process; eligibility criteria; home improvement measures covered by the Scheme; the 'plan home improvements' tool and example outputs on the SEA website; and the 'find an installer' tool on the SEA website. Copies of the stimulus are provided in Annex 7.

Wider supply chain

A total of 20 interviews with representatives from manufacturers, certification bodies, auditors and training providers was scheduled for the process evaluation.

Organisation representatives participated in semi-structured interviews lasting approximately 45-60 minutes using a topic-guide developed with BEIS. Participants were posed questions on their organisational context, recent demand for products and services, recently added products and services, changes in workforce, skills and innovation, prospects of business growth, and views on the Scheme.

Manufacturers: Eleven manufacturers were recruited. A diverse mix of manufacturers was recruited covering all four measure sub-categories defined in the Scheme (i.e. insulation, heat pumps and solar thermal, heating controls, and windows and doors) and all sizes of

businesses (i.e. SME and large). Manufacturers were selected through a combination of EST's existing business database and online searches. Businesses were requested to put forward senior employees with an understanding of business strategy and the ability to speak on behalf of the business.

Certification bodies: Eight certification bodies were recruited. This included a balance of TrustMark and MCS certification providers. They varied in the length of time they have been certifying and the number of members. Areas of specialism were also diverse, including measures such as insulation, biomass, electrics, windows, doors, roofing and energy assessment.

Training providers: Six training providers were interviewed. These providers varied in the work packages they delivered and the length of time they had been training. All training providers were delivering training exclusively for energy efficiency and renewable energy measures.

Auditors: Five auditors were interviewed during the process evaluation, their recruitment was quite challenging as very few quality inspections have been conducted on the measures installed at the time of these interviews. The outcome evaluation will likely yield more information on this topic.

Installer survey

The installer survey was conducted by telephone. All installers listed in the GHGVS who had provided consent to be contacted for the research were included in the sample for the research: 791 records were issued for fieldwork.

The questionnaire was developed by Ipsos, in consultation with BEIS and other partners (to ensure that data met the needs of different parts of the evaluation). The survey was 'soft launched' and reviewed after the first nine interviews were complete: including collating feedback from the interviewers and reviewing survey data. Following this feedback, some deletions were made, one question was added, and a supplementary interviewer instructions and briefing notes were made available to help interviewers to deal with participant comments and queries. The average interview length was 24 minutes.

A total of 218 interviews was completed with installers, with the soft launch running from 10 to 12 May 2021, and the main phase of fieldwork from 1 June to 6 July 2021. Because of a lack of suitable profile data in the installer database, the installer data is presented unweighted.

Applicant survey

The applicant survey employed a push to web method. This entails contacting applicants by post to invite them to complete a survey online. Those who cannot complete online complete the survey by telephone. Sampled applicants received a written invitation at the applicant address which contained a request to visit the survey website to complete the survey online.

Access to the survey was controlled by password, which was provided in the invitation letter. Participants who were unable to complete the survey online were invited to call the survey helpline and request to complete the interview by telephone. All applicants were offered a £10 shopping voucher as a thank you for completing the survey. A total of 3,606 applicants completed the survey.

The sample for the applicant survey was drawn from the Scheme data. In order to be eligible to complete the survey, applicants had to have:

- applied for at least one Green Homes Grant Voucher,
- consented to be re-contacted for the research, and
- an applicant status in one of the following categories:
 - In progress
 - Grant application incomplete
 - Grant application completed
 - Grant application update received
 - Eligibility verification
 - Request sent – grant application incomplete
 - Landlord
 - Park home
 - Application received.

The sample was drawn from an anonymised version of the Scheme data. With an anticipated response rate of around 20%, and a target of 3,000 interviews, a total sample of 15,506 was selected (assuming 8% of addresses would be unusable e.g. empty, applicant moved, away/on holiday through fieldwork period, etc.). The sample was stratified by key variables including Scheme type (main vs. low-income), applicant type (owner-occupier, landlord, other), property type (house vs. flat vs. park home) and measure (aiming for a minimum of 100 completed interviews per primary measure, and a minimum of 50 interviews per secondary measure). In the event, all eligible addresses were issued for landlords and those applying for vouchers for some measures (heat pumps, biomass boilers) with the aim of achieving the target number of interviews. For other applicants, a random sample was drawn following stratification by property type (house vs. flat), Scheme type (main vs. low-income), number of measures for which vouchers were applied, and region. A total sample of 17,331 records was drawn.

After the sample was drawn, it was sent to BEIS where addresses and contact details for applicants were appended. Following cleaning of addresses, and other quality checks, a total sample of 15,506 was issued for fieldwork.

It was originally envisaged that three reminder mailings would be required to reach the target of 3,000 completed interviewers. However, after just the first invitation, the target number of interviews was reached for most analysis groups. The survey was left open until the communicated end date to allow anyone wishing to still respond to do so. The only sub-groups

with shortfalls in response were landlords, and applicants for vouchers for biomass boilers. To increase the response rates among these two groups, the non-responders in these categories were sent a further reminder letter asking them to take part.

The questionnaire was developed by Ipsos, in consultation with BEIS and other partners (to ensure that the survey data met the needs of different parts of the evaluation, including the cross-cutting evaluation). The average interview length was 20 minutes.

In total, 3,606 participants completed the survey, including 3,365 owner-occupiers, 177 landlords and 64 participants who had applied on behalf of others. This represents a total response rate of 23%. Fieldwork ran from 10th July to 5th August 2021, though the majority of interviews were completed within the first week of fieldwork (2,227 completes were received by 15th July). The target number of interviews for applicants for biomass boilers was reached (n=59 against a target of 50), though despite targeted reminders the total reached fell slightly short of the target number of interviews with landlords (n=177 against a target of 200).

Data were weighted to the profile of the applicant database by key variables including Scheme type, applicant type, property type and region. The impact of the weighting was slight, and the final effective sample size was 88%.

Methodological challenges and limitations

This process evaluation was able to reach a wide range of audiences through both quantitative and qualitative methods, which it was possible to triangulate with Scheme data produced by BEIS and the Scheme administrator. An experienced and high skilled research team designed robust questionnaires and topic guides which were then quality assured and reviewed by BEIS. However, the adopted methodology presents the following limitations:

1. It was not possible to consult with the Scheme administrator of the Scheme. Though this did not affect our ability to map out the processes of Scheme (as the information was collected from BEIS) nor to answer the process evaluation questions (as these focussed principally on the experience of installers and applicants and the effects of the Scheme on them), this does represent an omission of a key stakeholder voice. This means that it will be necessary to consult several sources of information for the outcome evaluation to fill gaps in our understanding around particular sub-processes for installing specific measures (e.g. processes for recording low carbon heating installations vs. insulation on the SLM).
2. The applicant survey may present some self-selection bias, resulting in a higher proportion of people with completed installations being represented in the survey responses than within the Scheme data. This is possibly because – as demonstrated in feedback received from the telephone and email helpline - some applicants invited to the survey incorrectly understood that they had to have a completed installation to participate.

3. There were data quality issues across many of the datasets used to do the analysis (including Scheme data, TrustMark, EPC and applicant survey) where records, at times, contradicted each other. In a few instances, where data differed across datasets, a judgement had to be made as to which source to use based on perceived accuracy of the data collection method.
4. It was not possible to assess fuel poverty status for 28% of all applicants completing the survey. Some sub-groups are disproportionately represented in that chunk meaning that there may be some over- or under-estimation of FP levels for those groups.

Additionally, the following challenges were faced which had a minimal impact on the research overall:

5. Some issues were experienced with the quality of Scheme data – for instance, at the time of writing, complaints data had not been accurately recorded and could therefore not be used. However, with some data cleaning and collaboration with BEIS it was possible to produce a dataset which was representative of the Scheme delivery.
6. Installers were hard to reach and the response rate to the installer survey was lower than initially anticipated, but the views expressed by those consulted was highly consistent suggesting that saturation of evidence from the group had been reached.
7. It was not possible to speak to any tenants in rental properties benefitting from the Scheme because very few applied to the Scheme (therefore their contact details were not available) and it was very challenging to reach them through their landlords (as it relied on landlords being willing to promote participation in the research and the tenants being willing to participate). However, it also appears that many landlords applied to the Scheme for measures in properties whilst they were unoccupied. It is therefore highly likely that it was a relatively small number of tenants affected by it and the lack of representation of tenants in the evaluation evidence is largely reflective of this fact.

Annex 4: Costs analysis

This analysis of the economic impact of the GHGVS in the process evaluation has focused on addressing two evaluation questions (EQ):

- 1) What are the costs incurred for installing energy efficiency/low carbon heat measures in homes, and how do these costs compare with industry averages?
- 2) To what extent has there been any inflation of costs under the Scheme?

These questions were addressed by analysing the GHGVS Scheme data up to the 6th of August 2021.⁵⁶ The total number of measures (insulation and low carbon heat) assessed is 30,153. The first EQ involves the use of two sources to assess the degree of comparability with industry averages, the estimates provided by Ecuity Consulting LLP and the estimates provided by the MCS Service Company Ltd. The costs incurred for installing GHGVS measures are categorised based on the classification of property type used in the industry average datasets to allow comparison between Scheme data and these benchmarks. The second EQ examines whether there is any evidence of cost inflation occurring under the GHGVS, based on the same cost classification adopted in the first EQ.

The analysis implemented to answer these two EQs focuses on completed installations of primary energy efficiency and low carbon heat measures of the GHGVS. The quoted amount of the voucher ("quote_amount" variable in the GHGVS dataset) has been used to compute the average cost for each category of GHGVS measure and property type.

The assessment of cost inflation is based on monthly average costs, with costs allocated to specific months based on the month when the voucher was issued ('d_voucher_issued_date' variable in the GHGVS dataset). The tables below set out the number and share of each type of insulation measures and related property types, followed by tables showing the same split for low carbon heat measures.

⁵⁶ Analysis for the comparison between the average costs of GHGVS measures with industry average costs, and the assessment of inflationary pressure, was implemented on property types with sample sizes above 30 observations.

Table A4.1: Frequency of insulation measures

Measure Type	Count	Share
Cavity wall insulation	3,693	16%
External solid wall insulation	4,741	21%
Internal solid wall insulation	754	3%
Loft insulation	6,358	28%
Park home insulation	291	1%
Pitched roof insulation	5,322	23%
Under-floor insulation: solid insulation	54	0.2%
Under-floor insulation: suspended insulation	1,458	6%
Total	22,671	100%

Table A4.2: Frequency of property types where insulation measures have been installed

Property Type	Count	Share
Bungalow	105	0.5%
Bungalow: Detached	1,583	7.0%
Bungalow: Mid Terrace	164	0.7%
Bungalow: Semi-Detached & End Terrace	720	3.2%
Detached	481	2.1%
Detached House	282	1.2%

Property Type	Count	Share
House: Detached	4,269	18.8%
End-Terrace	2,169	9.6%
Flat	48	0.2%
Flat: 2 External Walls	74	0.3%
Flat: 3 External Walls	113	0.5%
Maisonette: 2 External Walls	15	0.1%
Maisonette: 3 External Walls	26	0.1%
Mid-Terrace	4,459	19.7%
Semi-Detached	6,039	26.6%
Semi-Detached House	473	2.1%
Semi-Detached/Terrace	1,030	4.5%
Double Park Home	204	0.9%
Park Home	45	0.2%
Single Park Home	49	0.2%
Terraced House	323	1.4%
Total	22,671	100.0%

Table A4.3: Frequency of low carbon heat measures

Measure Type	Count	Share
Air source heat pump	2,312	31%
Hybrid heat pumps	731	10%
Solar thermal	4,439	59%
Total	7,482	100%

Table A4.4: Frequency of property types where low carbon heat measures have been installed

Property Type	Count	Share
Bungalow	37	0.5%
Bungalow: Detached	604	8.1%
Bungalow: Mid Terrace	59	0.8%
Bungalow: Semi-Detached & End Terrace	252	3.4%
Detached	220	2.9%
Detached House	93	1.2%
House: Detached	1,800	24.1%
End-Terrace	826	11.0%
Flat	2	0.0%
Flat: 2 External Walls	12	0.2%
Flat: 3 External Walls	19	0.3%

Property Type	Count	Share
Maisonette: 2 External Walls	3	0.0%
Maisonette: 3 External Walls	3	0.0%
Mid-Terrace	1,164	15.6%
Semi-Detached	1,815	24.3%
Semi-Detached House	129	1.7%
Semi-Detached/Terrace	334	4.5%
Double Park Home	15	0.2%
Park Home	1	0.0%
Single Park Home	5	0.1%
Terraced House	89	1.2%
Total	7,482	100.0%

Comparison of costs of GHGVS measures with industry averages

This section compares the average costs incurred for the GHGVS installations of insulation and low carbon heat measures with the industry average costs the estimates provided by Ecuity Consulting LLP (for the insulation measures) and by the MCS Service Company Ltd (for the low carbon heat measures).⁵⁷ Overall, the costs incurred for installing GHGVS measures are higher than industry averages in some cases. In particular, the average costs of installing insulation in park home and loft insulation for all property types is higher compared to the industry average. The installation of external solid wall and under floor insulation also appears to be overall higher than the industry average. The average cost of installing low carbon heat

⁵⁷ The industry average cost for hybrid heat pump is based on the requested Ecuity Consulting LLP fraud related data.

measures under GHGVS appears to be more similar to industry averages, compared to insulation measures.

Insulation measures

The following tables set out the comparison between GHGVS installation costs and industry averages for cavity wall insulation, external solid wall insulation, internal solid wall insulation, loft insulation, underfloor insulation, park home insulation and pitched roof insulation. The way the average installation costs of GHGVS measures were computed and compared to the industry averages was based on the applicable area of the measure for each property type.

In all tables below, the property type in column 1 indicates the category used in the classification from the industry average cost dataset. The average in “the installation costs” column does not refer only to the configuration of the property type in column 1 but to the wider property type for which data are available in the GHGVS dataset matching the applicable area indicated in the fifth column of the table. As an example, the £1,474 figure in Table A4.5 refers to the bungalows contained in the GHGVS dataset for which the installation was applied on 4 walls (as indicated in the fifth column). This applicable area corresponds to “Bungalow, 3 bed, ~115m²” in the industry average cost dataset. The names of the property types reflect those in the industry average cost dataset.

Table A4.5: Comparison between installation under GHGVS and industry average for cavity wall insulation

Property Type	Installation Cost	Sample size	Industry average	Applicable area (walls)	Difference between GHGVS cost and industry average (%)
Bungalow, 3 bed, ~115m ²	£1,474	324	£1,300	4	13%
Detached, 4 bed, ~130m ²	£1,945	931	£2,000	4	-3%
End-Terrace, 2 bed, ~80m ²	£1,418	142	£1,300	3	9%
Mid-Terrace, 2 bed, ~75m ²	£918	177	£1,300	2	-29%
Semi-detached, 3 bed, ~100m ²	£1,347	774	£1,500	3	-10%

Table A4.6: Comparison between installation under GHGVS and industry average for external solid wall insulation

Property Type	Installation Cost	Sample size	Industry average	Applicable area (walls)	Difference between GHGVS cost and industry average (%)
Bungalow, 3 bed, ~115m ²	£9,846	119	£9,500	4	4%
Detached, 4 bed, ~130m ²	£12,553	106	£12,000	4	5%
End-Terrace, 2 bed, ~80m ²	£10,405	358	£7,750	3	34%
Mid-Terrace, 2 bed, ~75m ²	£8,403	610	£7,000	2	20%
Semi-detached, 3 bed, ~100m ²	£10,242	1,451	£10,500	3	-2%

Table A4.7: Comparison between installation under GHGVS and industry average for internal solid wall insulation

Property Type	Installation Cost per room	Sample size	Installation Cost	Industry average	Applicable area (rooms)	Difference between GHGVS cost and industry average (%)
Bungalow, 3 bed, ~115m ²	£1,776	33	<i>n/a</i>	£6,500	<i>n/a</i>	<i>n/a</i>
Detached, 4 bed, ~130m ²	£2,537	36	<i>n/a</i>	£9,500	<i>n/a</i>	<i>n/a</i>
End-Terrace, 2 bed, ~80m ²	£1,645	<i>n/a</i>	£6,580	£6,750	4 or more	-3%

		101	(4 rooms)			
Mid-Terrace, 2 bed, ~75m ²	£1,628	370	£4,884 (3 rooms)	£3,800	less than 4	29%
Semi-detached, 3 bed, ~100m ²	£1,673	170		£7,000	n/a	n/a

Note: installation cost per room refers to the average cost computed based on all observations in each property type due to the small sample size not allowing within property classification. Comparison between GHGVS installation cost with the industry average can be done when the applicable area is available for the industrial average estimates provided by Ecuity Consulting LLP, i.e. for End-Terrace properties (applicable area: 4 or more rooms) and Mid-Terrace properties (applicable area: less than 4 rooms). This comparison relates to columns 4 and 5.

Table A4.8: Comparison between installation under GHGVS and industry average for loft insulation

Property Type	Installation Cost	Sample size	Band used for installation cost	Industry average	Applicable area (m ²)	Difference between GHGVS cost and industry average (%)
Bungalow, 3 bed, ~115m ²	£1,705	35	110-120m ²	£900	115	89%
Detached, 4 bed, ~130m ²	£1,119	432	60-70m ²	£1,100	65	2%
End-Terrace, 2 bed, ~80m ²	£800	175	35-45m ²	£600	40	33%
Mid-Terrace, 2 bed, ~75m ²	£813	325	35-45m ²	£600	38	36%
Semi-detached, 3 bed, ~100m ²	£991	526	45-55m ²	£800	50	24%

Note: computation of average installation cost for each property type is based on the square meter bands provided in column 4.

Table A4.9: Comparison between installation under GHGVS and industry average for underfloor insulation

Property Type	Installation Cost per m2	Sample size	Industry average	Applicable area (m2)	Industry average per m2	Difference between GHGVS cost and industry average (%)
Bungalow, 3 bed, ~115m2	£40	142	£2,875	115	£25	60%
Detached, 4 bed, ~130m2	£44	280	£3,250	65	£50	-12%
End-Terrace, 2 bed, ~80m2	£55	124	£2,000	40	£50	10%
Mid-Terrace, 2 bed, ~75m2	£53	322	£1,875	38	£50	6%
Semi-detached, 3 bed, ~100m2	£51	600	£2,500	50	£50	2%

Note: installation cost per m2 refers to the average cost computed based on all observations in each property type due to the small sample size not allowing within property classification. Comparison between GHGVS cost (column 2) with the industry average (column 6) can be done at the level of m2 for each property type, by using the applicable area and the industry average per m2 from the requested Ecuity Consulting LLP fraud related data which correspond to the industry averaged figure in column 4.

Table A4.10: Comparison between installation under GHGVS and industry average for park home insulation

Property Type	Installation Cost per m2	Sample size	Industry average per m2	Difference between GHGVS cost and industry average (%)
ALL	£91	291	£80	14%

Low carbon heat measures

The following table compares the costs of low carbon heat installations under GHGVS with the industry averages. All costs were provided by the MCS Service Company Ltd,⁵⁸ apart from the costs for hybrid heat pump for which Ecuity Consulting LLP fraud related data was used.

Table A4.11: Comparison between installation under GHGVS and industry average for low carbon heat measures

Measure Type	Installation Cost per unit	Sample size	Industry average	Difference between GHGVS cost and industry average (%)
Air source heat pump	£11,181	2,312	£11,488	-3%
Hybrid heat pump	£6,647	4,439	£10,306	-3%
Solar thermal	£10,017	731	£6,188	7%

Results of the analysis of GHGVS installation costs to industry averages

With regard to the insulation measures:

- The average cost of cavity wall insulation is higher than the industry average for the cases of bungalow and end-terrace properties, by 13% and 9% respectively. The installation cost for mid-terraced properties, however, appears to be 29% lower compared to the industry average.
- The average cost for external solid wall insulation appears to be considerably higher (34%) for end-terraced properties and somewhat higher (20%) for mid-terraced properties. The indication for higher costs in these types of properties needs to be further assessed by triangulating evidence from the qualitative and quantitative analysis.
- The average cost of internal solid wall insulation appears to be similar to the industry average for end-terraced properties but higher for mid-terraced properties.
- The average cost of loft insulation under the Scheme appears to be higher than the industry average by 36%, 33% and 24% for mid-terraced, end-terraced and semi-

⁵⁸ The industrial cost of air source heat pump and solar thermal is based on MCS average cost data from November 2020 to June 2021.

detached properties, respectively. It also appears to be considerably higher for bungalows but the sample for bungalows is very small, so this observation needs to be taken with caution.

- The average cost of underfloor insulation is lower than the industry average by 12% in the case of detached properties, but higher by about 60% in the case of bungalows. Small differences can be seen for the other property types.
- The average cost for park home insulation is higher than the industry average by 14%.
- With regard to low carbon heat measures the average cost of installation under the Scheme appears broadly comparable to the industry averages. Air source heat pumps appear to be lower than the industry average by 3%. Installation of hybrid heat pumps also appear to have a slightly lower cost of 3%, while the average cost of solar thermal is 7% higher compared to the industry average.

Cost inflation analysis

This section assesses whether there has been a cost inflation of installed measures under the Scheme. The average cost of each measure category is computed for each month based on the date when the voucher was issued to assess whether installation costs have been relatively stable or showed a directional pattern throughout the Scheme. Overall, no evidence of a clear directional pattern of costs throughout the Scheme implementation is suggested, as cost figures appear to be on average relatively stable. Some cost variation is observed in the cases of cavity wall and loft insulation, where costs in May and June appear to be higher compared to the overall average cost in the case of some of the property types.

Table A4.12: Cost inflation of GHGVS measures.

Cavity wall insulation	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Bungalow, 3 bed, ~115m ²	£1,474	<i>n/a</i>	£1,471	<i>n/a</i>	£1,537	£1,352	£1,367	<i>n/a</i>	<i>n/a</i>
Sample size	324	<i>n/a</i>	87	<i>n/a</i>	57	40	62	<i>n/a</i>	<i>n/a</i>
Detached, 4 bed, ~130m ²	£1,945	£1,906	£1,898	£1,891	£1,964	£1,809	£1,939	£2,139	£2,382
Sample size	931	54	270	127	123	96	136	72	40
Mid-Terrace, 2 bed, 75m ²	£918	<i>n/a</i>	£834	<i>n/a</i>	£788	<i>n/a</i>	£1,009	<i>n/a</i>	<i>n/a</i>
Sample size	177	<i>n/a</i>	46	<i>n/a</i>	33	<i>n/a</i>	33	<i>n/a</i>	<i>n/a</i>
Semi-detached, 3 bed, ~100m ²	£1,347	£1,218	£1,356	£1,345	£1,310	£1,267	£1,358	£1,547	<i>n/a</i>
Sample size	774	36	238	80	106	112	105	62	<i>n/a</i>

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External solid wall insulation	Ave. cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
End-Terrace, 2 bed, ~80m2	£10,405	<i>n/a</i>	£10,211	£10,570	£10,665	£10,337	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Sample size	358	<i>n/a</i>	124	49	82	35	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Mid-Terrace, 2 bed, ~75m2	£8,403	<i>n/a</i>	£8,267	£8,443	£8,550	£7,554	£8,181	£9,053	<i>n/a</i>
Sample size	610	<i>n/a</i>	200	84	124	33	49	67	<i>n/a</i>
Semi-detached, 3 bed, ~100m2	£10,242	£9,955	£10,202	£10,312	£10,344	£10,208	£10,338	£10,235	<i>n/a</i>
Sample size	1451	90	554	188	211	141	167	64	<i>n/a</i>
Internal solid wall insulation	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mid-Terrace, 2 bed, ~75m2	£1,628	<i>n/a</i>	£1,692	£1,678	£1,425	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
Sample size	370	<i>n/a</i>	145	83	63	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

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Loft insulation	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Detached, 4 bed, ~130m2	£1,119	<i>n/a</i>	£983	£978	£1,018	£1,356	£1,162	<i>n/a</i>	<i>n/a</i>
Sample size	432	<i>n/a</i>	110	54	64	50	92	<i>n/a</i>	<i>n/a</i>
End-Terrace, 2 bed, ~80m2	£800	<i>n/a</i>	£690	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	£863	<i>n/a</i>	<i>n/a</i>
Sample size	175	<i>n/a</i>	46	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	36	<i>n/a</i>	<i>n/a</i>
Mid-Terrace, 2 bed, ~75m2	£813	<i>n/a</i>	£782	£769	£677	£971	£805	£1,000	<i>n/a</i>
Sample size	325	<i>n/a</i>	82	32	47	44	57	36	<i>n/a</i>
Semi-detached, 3 bed, ~100m2	£991	<i>n/a</i>	£863	£860	£984	£1,030	£968	£1,328	£1,210
Sample size	526	<i>n/a</i>	121	51	67	94	95	49	32

Evaluation of the Green Homes Grant Voucher Scheme (GHGV): process evaluation report

Under floor insulation	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Detached, 4 bed, ~130m2	£44	<i>n/a</i>	£47	£38	£41	£46	£42	£49	<i>n/a</i>
Sample size	280	<i>n/a</i>	68	40	42	45	35	32	<i>n/a</i>
Mid-Terrace, 2 bed, ~75m2	£53	<i>n/a</i>	£56	£52	£50	£52	£51	£52	<i>n/a</i>
Sample size	322	<i>n/a</i>	77	39	45	42	58	37	<i>n/a</i>
Semi-detached, 3 bed, ~100m2	£51	<i>n/a</i>	£50	£63	£45	£45	£49	£50	£59
Sample size	600	<i>n/a</i>	122	73	82	96	101	60	47
Pitched roof insulation	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
ALL	£64		£54	£55	£54	£66	£63	£64	£60
Sample size	5321		170	244	329	2429	476	304	117

Evaluation of the Green Homes Grant Voucher Scheme (GHGV): process evaluation report

Air source heat pump	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
per unit	£11,181	£11,349	£10,598	£10,915	£11,284	£10,133	£12,217	£11,650	£11,152
Sample size	2312	54	408	351	361	297	488	196	126
Hybrid heat pump	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
per unit	£10,017	<i>n/a</i>	£9,958	£10,060	£10,010	£9,995	£10,020	£10,028	£10,044
Sample size	731	<i>n/a</i>	33	71	80	175	233	60	72
Solar thermal	Average cost	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
per unit	£6,647	<i>n/a</i>	£6,349	£6,619	£6,716	£6,563	£6,600	£6,896	£7,175
Sample size	4439	<i>n/a</i>	343	344	948	1337	888	354	165

The above table indicates that the costs of installing measures under GHGVS appear to be, in general, relatively stable throughout the months of the Scheme implementation. More specifically:

- Cavity wall insulation costs have been fairly stable throughout the Scheme with only some cases considerably deviating from the overall average cost. In particular, the cost in May and June is 10% and 22% higher than the overall average cost in detached properties. A similar pattern is observed for the costs in May in semi-detached properties.
- Costs for external solid wall insulation have been very stable throughout the Scheme for all months and property types.
- Internal solid wall insulation does not exhibit an evident directional pattern, although the cost in February is 12% lower compared to the overall average cost. However, as previously noted, there are challenges in making comparisons in the case of this measure, so this variation should be taken with caution.
- Costs for loft insulation appear to be on average relatively stable but some cost divergence from the overall average cost is observed in May for mid-terraced properties and in May and June for semi-detached properties. This observation might be related to the impact of lockdown and/or the decreased demand for such installations during the winter, and the subsequent easing and surge in the demand during the Spring.
- Costs for underfloor insulation have been relatively stable during the Scheme implementation.
- Pitched roof insulation costs have been fairly stable although appeared slightly higher in the Spring months compared to the winter months.
- Costs for low carbon heat measures, i.e. air source heat pumps, hybrid heat pumps and solar thermal, have been relatively stable throughout the Scheme implementation. An instance of a deviation can be seen in the case of the cost of solar thermal in June which appears to be higher by 8% compared to the overall average cost.

Annex 5: Fuel poverty analysis

One of the aims of the GHGVS is to reach people, particularly those who are fuel poor, who may be struggling to afford to adequately heat their homes, either because they have low incomes, energy inefficient homes, or a combination of the two. To help to understand whether the Scheme has been successful in reaching these people, BRE have modelled a proxy fuel poverty status for participating households.

The current definition of fuel poverty being used in England is the low-income low energy efficiency (LILEE) metric. Under this definition, households are fuel poor if:

- They have a fuel poverty energy efficiency rating⁵⁹ (FPEER) of band D or below and;
- The household income after housing costs and fuel costs falls below a set income threshold (defined as 60% of the national after-housing-cost (AHC) equivalised income).

BRE combined data collected as part of the GHGVS with their proprietary SAP model to model the likelihood of a household being in fuel poverty, prior to any installation of measures through the Scheme.

Methodology

The proxy fuel poverty indicator comprises of two components: (i) the income of the household and (ii) the energy efficiency rating of the dwelling. If a household falls below both the income threshold (defined as 60% of the AHC equivalised income⁶⁰) and the modelled energy efficiency threshold (defined as EPC band D or below), then they will be flagged as likely to be fuel poor. The energy efficiency threshold of band D or below has been chosen to align with the newly announced LILEE fuel poverty definition, whilst still providing a good proxy of whether a household has high fuel bills, as defined under the low income, high cost (LIHC⁶¹) fuel poverty definition.

⁵⁹ The FPEER methodology is based on the Government's Standard Assessment Procedure (SAP) for assessing the energy performance of domestic properties while taking into account the impact of policy interventions (e.g. Warm Homes Discount) that directly affect household energy costs. Like SAP, the methodology gives an energy efficiency rating from 0 (lowest) to 100 (highest). This rating can be translated into an energy efficiency 'Band' from G (lowest) to A (highest), rather like the SAP rating being used to generate an overall energy efficiency Band (again from G to A) for EPCs. As a general rule, the EPC band will be a good proxy for the FPEER band.

⁶⁰ AHC = income after housing costs. Housing costs include mortgage and/or rent on the property. Equivalisation is an adjustment to take into account variations in the size and composition of the household

⁶¹ The Low Income High Costs (LIHC) indicator is a measure of fuel poverty in which a household is considered to be fuel poor if: (a) They have required fuel costs that are above average (the national median level); and (b) Were they to spend that amount, they would be left with a residual income below the official poverty line. The LIHC definition is a relative indicator as it compares households to the national median fuel costs and income – thereby reflecting contemporary trends.

Derivation of Income

The applicant survey identifies whether the household's equivalised AHC income falls below the income threshold. This measure was only considered for applicants who were responding to the survey in relation to a voucher application for a property in which they lived. No assessments were made of AHC income for properties for which applications were made by landlords or those applying on behalf of others. This means that a total of 241 (unweighted) properties were excluded from the analysis (177 landlord properties and 64 where the application was made on behalf of others). This resulted in a total of 3,365 participants being asked about AHC income.

Respondents who had applied for measures for the property in which they lived were asked to estimate the amount of money they have left after accounting for housing costs. They were asked whether their household income after housing costs was above or below a threshold which was based on the number of children (aged 13 or younger) and adults (aged 14+) in the household. The threshold was calculated as follows, based on 2018 household incomes:

$$\text{income threshold} = 13,927^{62} \times (0.58 + (0.42 \times (\text{number of adults in household}-1)) + (0.2 \times \text{number of children in household}))$$

The calculation was embedded in the survey script, and fed in the appropriate income threshold into the relevant question. The question asked:

[If household owns property with mortgage/Once your household has paid your mortgage] [If household part rents/part owns property (shared ownership)/Once your household has paid your mortgage and the rental on your property] [If household rents property (private or social rent)/Once your household has paid your rent] [All others/Once your household has paid any housing costs], would you say the money you have left each month is more than <threshold >, or less than this?

It was not possible to assess the AHC income for 28% (1001 participants) of all applicants completing the applicant survey, as follows:

- 241 who were not asked because not applicable to them (177 landlords, 64 making an application on behalf of others); and
- 760 who applied for the property in which they lived, but who did not provide an answer (unable to assess household structure, did not know or preferred not to answer the question about AHC equivalised income).

It was not possible to assess AHC income for 23% of occupants completing the Wave 1 survey (i.e. 760 of the 3,365 participants applying for the property in which they lived). The proportion of occupants for which it was not possible to assess AHC income, and therefore for which the survey data is also likely to under- or over-estimate levels of fuel poverty, was higher amongst the following groups (v 23% of occupants on average):

⁶² 60% of the AHC Income in the 2018 dataset.

- Older participants (33% of those aged 75 or older vs. 20% of under 35s)
- Ethnic minorities (31% of those from ethnic minority communities, vs. 19% of white participants).
- Those applying for properties in London (27%), West Midlands (27%), and East of England (25%).
- Those applying through the low-income Scheme (24%, vs. 22% applying through the main Scheme).
- Those applying for insulation measures (24%) or secondary measures (26%), compared with 20% applying for low carbon heating measures. Levels were particularly high for those applying for wall insulation (25%), and draught proofing, glazing or replacement doors (27%).

Derivation of Energy Efficiency Rating

Up-to-date EPC data was not available for households participating in the scheme. For this reason, the Energy Efficiency Rating of the dwelling was modelled for each of the households surveyed (prior to any improvements being installed through the Scheme), following the RdSAP⁶³ methodology. This is the same method used in the creation of EPCs. The modelling has allowed for a SAP rating to be calculated which can then be converted into an EPC band, between A and G, for each dwelling in the sample, where A represents very low fuel cost (high energy efficiency) and G represents very high fuel costs (low energy efficiency). Dwellings with a modelled EPC band of D or below will be classed to have a 'low energy efficiency', and occupants living in these dwellings will be flagged as likely to be fuel poor, if their income also falls below the income threshold. Since the rating here has been based on RdSAP, it does not take into account the impact of policy interventions (e.g. Warm Homes Discounts), potentially leading to a small number of households being classed as fuel poor that would not have been if such policy interventions were able to be taken into account in the calculations.

To perform a true RdSAP (EPC) calculation, detailed information regarding the physical characteristics of the dwelling and energy efficiency measures is required. It was not feasible to acquire this level of information for dwellings being improved as part of the GHGV scheme. There was limited information available regarding the physical characteristics of the dwellings. Therefore, BRE used their 'Simple SAP' stock model to produce SAP ratings, which consists of two separate models: the BRESMI model and the Baseline model. The BRESMI model allows for an RdSAP calculation to be performed with much fewer inputs than would be normally required, by utilising in-built imputation procedures. The Baseline model applies statistical modelled distributions to infer building characteristics, where key inputs are unknown.

Despite the various sources of input data specified, some of the critical data inputs were not available for each household. Where data were missing, BRE's model (the Baseline model) imputed the values using statistical modelling techniques (see Imputation methodology section

⁶³ A Reduced data version of a standard SAP calculation, Reduced data SAP (RdSAP).

below for more details). This imputation process uses data from the English Housing Survey to determine the likely distribution of building characteristics, given a specific dwelling archetype and geographical location, the scale of this imputation is discussed in the ‘assumptions and limitations’ section. This provides an estimation of building characteristics across the whole sample but is not accurate when focusing in on specific dwellings.

After all the required data inputs were collated or imputed for each household in the sample, an RdSAP calculation was performed to determine the dwelling’s modelled EPC band.

Of the 2,605 households for whom AHC income questions was assessed (i.e. excluding landlords, those applying on behalf of others, and those not providing a valid answer to the AHC income questions), there were only 128 properties for which it was not possible to provide an EPC. The lack of matching came about because it was not possible to match the Unique Property Reference Number (UPRN) for the property during the EPC modelling process: many of these were park homes.

Determining the Fuel Poverty status

The information collected from the applicant survey on income was combined with the modelled EPC rating to create the proxy Fuel Poverty status. If a household had an equivalised AHC income of below the income threshold, and a modelled EPC band of D or below, then the household was classified as likely to be in fuel poverty.

As noted above, this is only a proxy fuel poverty status, which has been developed to represent the LILEE fuel poverty definition,⁶⁴ currently in use in England. Differences in the data collection process, the model used to calculate an EPC band, and the method of combining income and energy efficiency metrics means that the actual fuel poverty status of each household (were it to be calculated using the official LILEE method) may differ. Despite the slight differences, EPCs are a very good proxy for FPEER ratings.

Amongst occupier applicants⁶⁵, it was possible to assess the fuel poverty status of 74% of the total sample (2,477 participants unweighted). This breaks down as follows:

Whether AHC income and/or EPC available	Number of occupier households	% of all occupier households
Able to assess fuel poverty status		
AHC income and EPC both available	2,477	74%

⁶⁴ Due to the correlation between the energy efficiency of a dwelling and the associated cost for heating the property, this proxy indicator can also be used to represent the Fuel Poverty status under the previously used LIHC (Low-income, High Cost) definition.

⁶⁵ Base: all who applied for a voucher for their current home n=3,365

Not able to assess fuel poverty status		
AHC income but no EPC	128	4%
EPC but no AHC income	720	21%
No EPC and no AHC income	40	1%
Total	3,365	100%

Groups amongst the occupier applicants for whom fuel poverty status was less likely to be assessed (because either AHC income or EPC could not be assessed) include:

Survey participants who did not provide data on AHC income

- Older applicants (37% of those aged 75+), linked to lower proportions in older age groups providing valid answers to questions on AHC income: given that older people are less likely to be assessed as fuel poor in national estimates, these lower levels of assessment in the applicant survey may lead to an overestimate of the prevalence of fuel poverty within the applicant survey data.
- Applicants from ethnic minority communities (32%, vs. 22% of white applicants), again linked to lower proportions providing valid answers on AHC income. Ethnic minorities are more likely to be assessed as in fuel poverty in national estimates, so this may lead to an underestimate of fuel poverty within the applicant survey data.
- Applicants in London (30%), West Midlands (29%), and East of England (27%).

Survey participants who did not provide data on EPCs

- Those applying for vouchers for park homes (73%), or flats (34%) vs. 24% of those applying for vouchers for houses. The high proportion for whom fuel poverty status could not be assessed amongst those applying for park homes is because of low levels of EPC matching on park homes. There is no estimate of fuel poverty level for park homes in national data, and the picture for flats is more mixed, with converted flats more likely than average to be assessed as fuel poor, but purpose-built flats less likely. On balance, given the prevalence of different housing stock in England, these levels of missing data will not greatly impact on overall (total-level) estimates.
- Those applying for vouchers for park home insulation (linked to the above, 73%). Levels of 'unable to assess' were also higher for those applying for secondary measures (27%) and particularly low for those applying for low carbon heating (21%).
- Applicants in London (30%), West Midlands (29%), East of England (27%) or South East (25%) as mentioned below.

Taken together, these results suggest that there may be some biases in the overall assessment of fuel poverty status, driven by higher levels of missing data for input variables to

the fuel poverty assessment. The latest fuel poverty statistics for England,⁶⁶ where 13% of respondents were estimated to be in fuel poverty in 2019, suggest that some in these groups are more likely to be in fuel poverty such as ethnic minority households (20% nationally), and those in the West Midlands (18% nationally), whilst others are less likely to be in fuel poverty such as households with the oldest member being aged 75+ (9% nationally), and those in purpose-built flats (11% nationally), etc.). It is therefore unclear the extent to which these biases have led to an overestimate or an underestimate of fuel poverty status for these groups of occupier applicants for the purposes of this evaluation.

Fuel poverty status findings

Findings on fuel poverty status are presented based only on occupiers (i.e. those applying for vouchers for the property in which they live), because landlords and those applying for vouchers on behalf of others were not asked questions about AHC income.

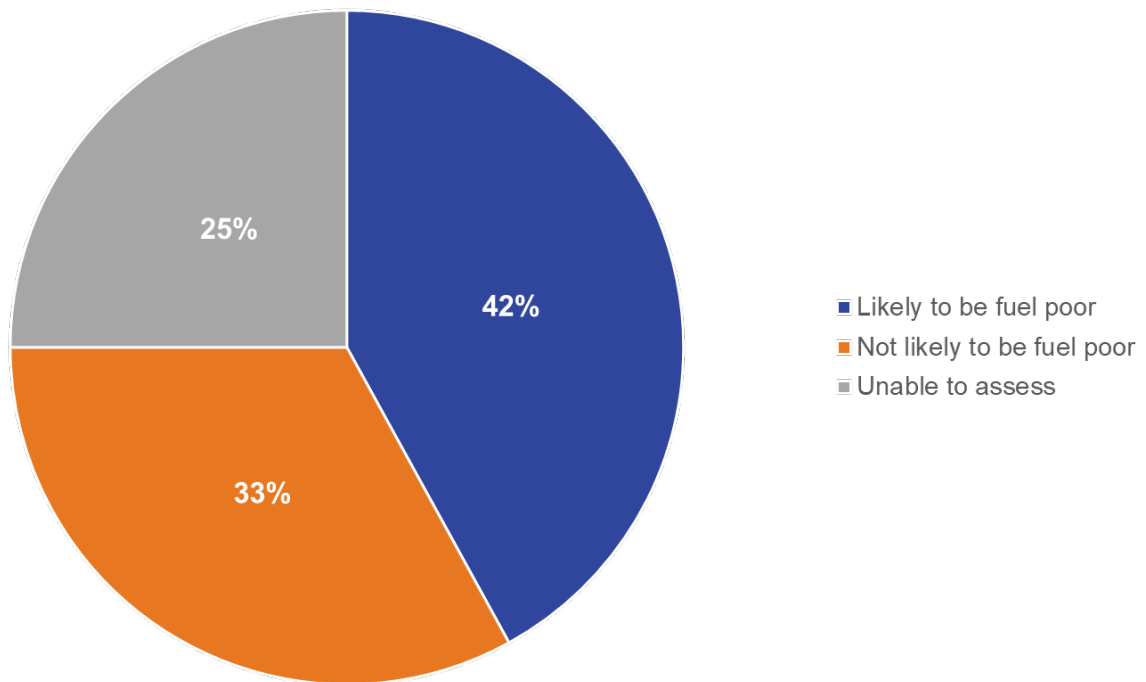
Across all occupiers responding to the applicant survey, 42% were assessed as likely to be in fuel poverty: a further 33% were assessed as unlikely to be in fuel poverty and an assessment could not be made for 26%⁶⁷. The latest annual fuel poverty statistics (for 2019⁶⁸) show that 13% of households in England are in fuel poverty, which suggests that the GHGV scheme has been successful in reaching households who are likely to be fuel poor.

⁶⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/966471/Fuel_poverty_detailed_tables_2019_data_LILEE.xlsx

⁶⁷ This comprises 23% for whom AHC income could not be assessed, and 4% for whom AHC could be assessed but no EPC was available. This sums to 26% because of rounding error.

⁶⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/966509/Annual_Fuel_Poverty_Statistics_LILEE_Report_2021_2019_data_.pdf

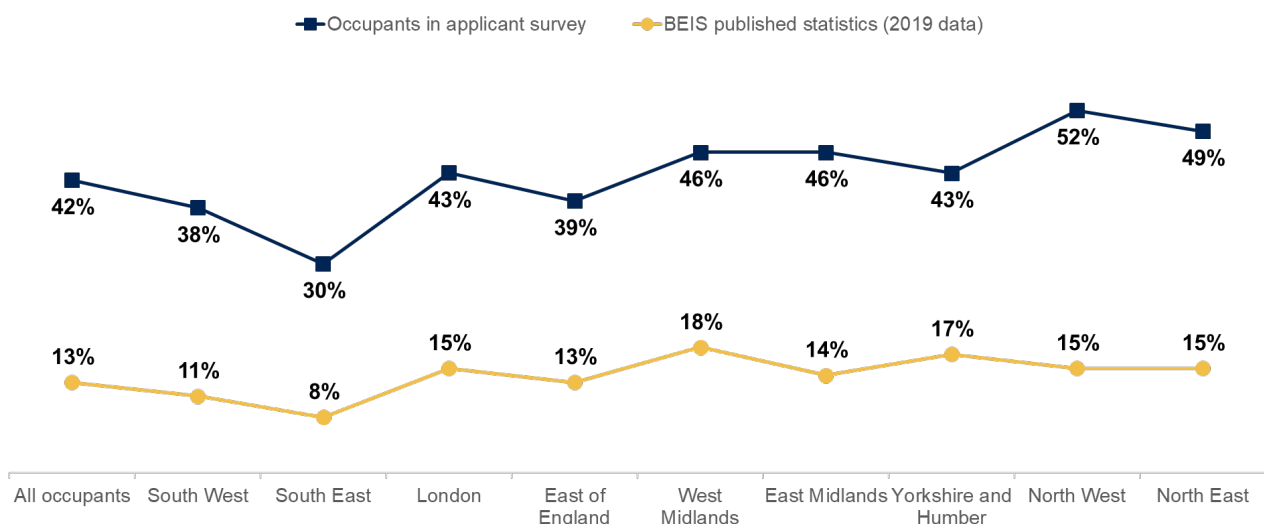
Figure A5.1: Fuel poverty status of households



Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: all occupants (applied for voucher for property in which they live) 3365.

Patterns in regional prevalence of fuel poverty amongst occupants in the applicant survey closely mirror those from published statistics: with prevalence lower in the South West and South East and higher in the West and East Midlands, North West and North East.

Figure A5.2: Fuel poverty status of household by region: applicant survey



Source: Green Homes Grant Voucher Scheme Applicant Survey
 Base: all occupants (applied for voucher for property in which they live) 3365. Base size varies by region, none smaller than North East (159)
 BEIS published statistics taken from Annual Fuel Poverty Statistics Report, 2021 (2019 data) with estimates taken from 2019 English Housing Survey

Prevalence of likely fuel poverty in the applicant survey also mirrored published statistics: a higher prevalence was recorded amongst those applying for measures for older properties (46% built before 1975 vs. 33% built between 1975-1995 and 21% built thereafter), houses

(43%, vs. 32% for flats) and larger properties (30% amongst properties with 0-1 bedrooms, 48% amongst properties with 2-3 bedrooms and 33% with 4 or more bedrooms).

However, unlike published statistics, the survey did not find any significant differences in fuel poverty status by heating type (gas vs. electricity).

To what extent has Green Homes Grant Voucher Scheme reached households likely to be in fuel poverty?

The higher prevalence of households likely to be fuel poor amongst occupants in the applicant survey compared with BEIS published statistics⁶⁹ across the country on average suggests that the Scheme has been successful in encouraging fuel poor households to apply: 42% of occupier applicants were assessed as fuel poor, compared with 13% national average from BEIS published statistics.

The low-income Scheme in particular includes a high proportion assessed as likely to be in fuel poverty (54% vs. 25% on the main Scheme), which suggests that the targeting of the Scheme has been successful in encouraging fuel poor households to participate. Overall, 75% of those assessed as likely to be in fuel poverty applied for vouchers through the low-income Scheme, compared with 36% who were not likely to be in fuel poverty (and 60% for whom an assessment could not be made).

However, it is notable that those likely to be in fuel poverty are significantly less likely than average to have had at least one measure installed by the time of the survey: only 42% had completed at least one installation (v 52% not likely to be in fuel poverty and 43% for whom an assessment could not be made). This does not appear to be a function of the types of measures applied for by the different groups (see below⁷⁰). Instead, this may indicate the presence of other barriers to completing installations which are being experienced by fuel poor households.

When those who had decided not to proceed or were considering not proceeding with measures were asked why this was, those likely to be fuel poor were consistently more likely than their non-fuel poor counterparts to say this was because there had been a change in their

⁶⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/966471/Fuel_poverty_detailed_tables_2019_data_LILEE.xlsx

⁷⁰ While those likely to be fuel poor were more likely than those not likely to be fuel poor to have applied for vouchers for insulation measures (71% vs. 66%) and less likely to have applied for low carbon heat measures (31% vs. 36%), there were no significant differences between measure types in the proportions of survey participants who said that at least one measure had been installed (55% of those applying for insulation and the same proportion applying for low carbon heat measures had had at least one measure installed). While households likely to be fuel poor were more likely to have applied for external solid wall insulation, which is the measure least likely to have proceeded to installation at the time of the survey, even amongst those applying for this measure fuel poor households were less likely than non-fuel poor households to have proceeded to installation at the time of the survey (31% vs. 35%) and were instead more likely to say that the installation was in progress (7% vs. 4%).

Any differences in installation rates between fuel poor and non-fuel poor households therefore do not appear to be because of differences in the mix of measures applied for.

financial circumstances which had left them unable to afford the installation, or because of issues with their installer (e.g. the installer was no longer able to proceed with the installation). Fuel poor households also appeared to be more sensitive to delays with installations (e.g. changes in financial circumstances, or being put off proceeding because of the time taken for voucher processing or waiting for installers to become available) which suggests that issues in Scheme administration (e.g. delays in processing) may have prevented some fuel poor households from benefiting from the Scheme.

Conversely, households unlikely to be fuel poor were more likely than their likely fuel poor counterparts to say they were put off proceeding by the fact that they may not save as much as hoped by the installation, or negative stories about the measure or installation.

Measures applied for by households likely to be fuel poor

Households likely to be fuel poor were more likely to have applied for external solid wall insulation (28% vs. 13% not likely to be fuel poor), and secondary measures (27% vs. 15% not likely to be fuel poor), in particular energy efficient replacement doors (13% vs. 7%). They were also less likely to have applied for cavity wall insulation (7% vs. 14%), loft insulation (19% vs. 23%) and heat pumps (air source, ground source or hybrid: 12% vs. 18%).

Some of these findings may be explained by dwelling characteristics. For instance, uninsulated solid wall homes are more likely to be occupied by those in fuel poverty (nationally 21%) than those with uninsulated cavity walls (nationally 15%). This could be because fuel poor households may have already benefited from other Government Schemes (e.g. CERT and ECO) to insulate cavities and lofts. This could explain why those likely to be fuel poor were less likely to have applied for loft and cavity wall insulation.

Typically, the installation of wall insulation, loft insulation and glazing have the greatest impact on a dwelling's SAP score. The fact that 71% of households likely to be in fuel poverty have applied for insulation measures, with wall (either solid or cavity) and loft insulation being the most popular measures, suggests that the most impactful measures are being prioritised by the fuel poor in many cases.

Table A5.1: Measures applied for by households likely to be in fuel poverty.

	All occupiers (3365)	Likely to be fuel poor (1282)	Unlikely to be fuel poor (1195)	Unable to assess (888)
ANY PRIMARY MEASURE	99%	99%	100%	99%
ANY INSULATION	71%	71%	66%	75%

	All occupiers (3365)	Likely to be fuel poor (1282)	Unlikely to be fuel poor (1195)	Unable to assess (888)
External solid wall insulation	23%	28%	13%	26%
Loft insulation	21%	19%	23%	22%
Cavity wall insulation	9%	7%	14%	8%
Pitched roof insulation	8%	9%	7%	8%
Under floor insulation (Suspended floor)	6%	6%	8%	5%
Flat roof insulation	3%	3%	4%	3%
Internal solid wall insulation	3%	3%	2%	3%
Room in roof insulation	3%	2%	4%	3%
Under floor insulation (Solid floor)	1%	1%	1%	1%
ANY LOW CARBON HEATING	32%	31%	36%	27%
Solar thermal	18%	18%	19%	16%
Air source heat pump	12%	10%	16%	9%
Double or triple glazing	6%	8%	4%	7%
Biomass boiler	1%	1%	0%	1%
Hybrid heat pump	1%	1%	1%	1%

	All occupiers (3365)	Likely to be fuel poor (1282)	Unlikely to be fuel poor (1195)	Unable to assess (888)
ANY SECONDARY MEASURE	22%	27%	15%	24%
Energy efficient replacement doors	10%	13%	7%	11%
Heating controls	9%	10%	7%	9%
Draught proofing	1%	1%	0%	2%
Secondary glazing	1%	1%	0%	1%

NB: Only measures applied for by 1% or more of those likely to be fuel poor show in table.

Park Home Insulation not shown because of biases in assessment because EPCs could not be calculated. Significant differences between households likely and unlikely to be fuel poor shown in bold

It is also notable that likely fuel poor households tended to have applied for vouchers for more measures than average (1.44 measures per property, vs. 1.29 for those unlikely to be fuel poor and 1.39 for those unable to assess). This may be linked to the high prevalence of low-income Scheme households amongst households likely to be fuel poor, as the low/no contribution nature of the low-income Scheme may have led to low-income Scheme households applying for as many measures as they could, rather than targeting the measures that their property needed most.

Methodological assumptions and limitations

Imputation methodology

Up-to-date EPC data was not available for the majority of dwellings participating in the GHGV scheme. It was therefore necessary for BRE to model the energy efficiency of the dwellings based on the limited data available and use the BRESMI model as described in the section 'Derivation of Energy Efficiency Rating' above. Where data was not available for certain dwelling characteristics these needed to be imputed using baseline data which was based on population distributions.

Excluding the UPRN, nineteen key variables feed into the BRESMI model. Of these, three variables in particular were largely imputed from the baseline model: hot water tank insulation,

solar hot water, and photovoltaics. For hot water tank insulation 2,461 households (99%) had the data imputed from the baseline run, as none of the datasets provided information on this.

All 2,477 households had information about solar thermal hot water systems imputed from the baseline run. Due to the infrequency of solar hot water systems, and to be conservative, the baseline run assumes that no household had these systems.

For photovoltaics 1,803 households (73%) had the data imputed from the baseline run. Due to the infrequency of photovoltaics, and to be conservative, the baseline run assumed that a household does not have photovoltaics. The applicant survey was the only dataset that provided any information on solar hot water and photovoltaic, but the questions did not distinguish between the two, so where an applicant said they did or didn't have one of these systems, it was assumed they meant photovoltaic, as this is much more common. All other variables had less than half of their data imputed from the Baseline model.

Excluding the solar hot water variable, all but two households had at least one variable imputed from the baseline run, this variable most likely being hot water tank insulation. Over half, 1,323 households (54%), had 3 or less variables imputed from the baseline run.

Due to the imputation method used in this analysis, only aggregated data analysis can be considered as robust. Data from the Baseline model should only be used and analysed collectively; small groups or individual households should not be relied on for accurate data.

Data quality

There were many problems with data quality, some of which have already been discussed. One major issue was the lack of data consistency across the datasets used in the modelling process: the Scheme data, TrustMark, EPC, and applicant survey datasets. Even on simple variables such as dwelling type values differed across datasets. The analysis conducted relied on a priority list that set out which dataset should be 'trusted' for each variable. This issue will be investigated further in the next wave of the fuel poverty analysis.

Modelled EPC vs existing EPC

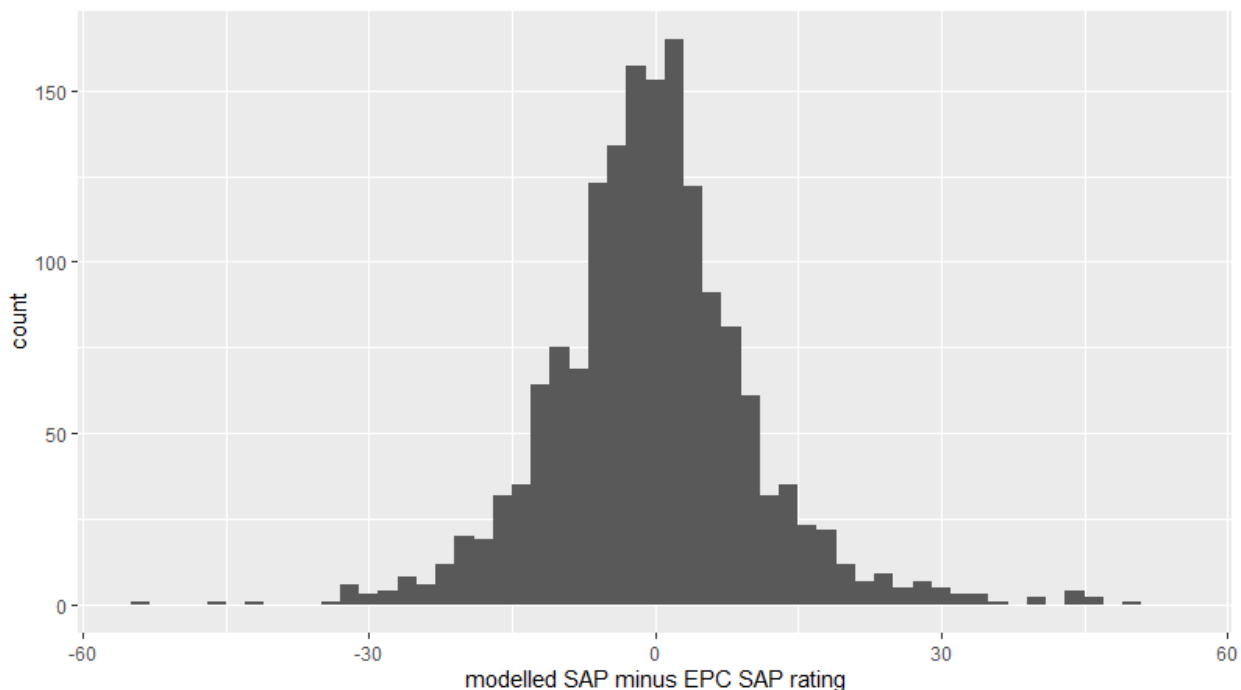
An existing EPC certificate and SAP rating, from the EPC dataset, was available for 1,617 households, 65.3% of the sample. This enabled BRE to compare the modelled SAP rating for these dwellings with the SAP rating calculated by an EPC assessor. Figure A5.3 shows the difference between the modelled and existing SAP rating. On average, the modelled SAP rating was very close to the existing SAP rating, with a mean difference of 0.1 SAP points suggesting that on average there is good agreement. However, the ratings for individual households, did deviate from the existing SAP rating, and the difference had a standard deviation of 10.7 SAP points indicating that there is some spread in the results. This suggests that in some cases the quality of the input data may not be reliable.

The standard deviation value could be the result of multiple factors, including but not limited to, the reliability of the EPC assessment, the quality of the data collected from other sources (including scheme data, Trustmark data and the householders themselves), and the reliability

of the models and baseline data (as described in the imputation methodology section above). In addition, changes made to the dwelling between the time of the EPC assessment and the application to the GHGV scheme could also explain the discrepancies between the existing EPC and modelled EPCs for some dwellings. For this reason, it is not possible to know whether the existing EPC (the majority of which were over 5 years old) or the modelled EPC (based on up-to-date scheme data, Trustmark data and information from the householders) are more accurate.

As 66% of the existing EPCs were over 5 years old, this analysis was repeated to only include those cases where EPC assessments were conducted within the past five years (544 households). The results were similar, the mean difference was 0.0 (1 d.p.), the standard deviation was 10.6, and there were still cases with large differences.

Figure A5.3: Difference in modelled SAP rating and EPC SAP rating



Base: All dwellings with an EPC SAP rating (n = 1,617).

Note: the EPC assessments were not all conducted at the same time and some of the assessments may have been conducted a number of years ago; therefore, some of the dwellings may have had improvements or changes made since their EPC assessments were conducted.

Data Sources used for model inputs

The table below shows the inputs required for the BRE SAP model to calculate an EPC rating for a particular dwelling, alongside the datasets and their priority used to inform the input values, if a dataset is not in a given row for a variable, this usually means information on that

variable was missing in that dataset. For the process evaluation of the GHG Voucher Scheme, data from the following sources were available to use as part of the modelling process:

- Data collected by the GHGVS Scheme administrator ('Scheme data')
- TrustMark
- Energy Performance Certificates (where available)
- Applicant Survey

Table A5.2: EPC modelling input data sources

Model Input Variable	Primary Data Source	Secondary Data Source	Tertiary Data Source
Tenure	Applicant Survey	Scheme / TrustMark	
Dwelling Type	EPC	Applicant Survey	
Dwelling Level	EPC		
Dwelling Age	EPC	Scheme / TrustMark	Applicant Survey
Number of Storeys	Scheme / TrustMark	EPC	Applicant Survey
Number of rooms	EPC	Scheme / TrustMark	
Loft Insulation	Scheme / TrustMark	EPC	Applicant Survey
Wall Type	EPC	Scheme / TrustMark	Applicant Survey
Wall Insulation	Scheme / TrustMark	EPC	Applicant Survey

Model Input Variable	Primary Data Source	Secondary Data Source	Tertiary Data Source
Double Glazing	Scheme / TrustMark	EPC	Applicant Survey
Main Heating System	Scheme / TrustMark	EPC	Applicant Survey
Type of Boiler	Scheme / TrustMark	EPC	Applicant Survey
Main Heating Fuel	Scheme / TrustMark	EPC	Applicant Survey
Main Heating Controls	Scheme / TrustMark	EPC	Applicant Survey
Water Heating	Scheme / TrustMark	EPC	Applicant Survey
Hot water tank insulation	Scheme / TrustMark	EPC	Applicant Survey
Solar hot water panels	Applicant Survey		
Photovoltaic Solar panels	Applicant Survey		
Floor area	EPC	Scheme / TrustMark	

Where there were differences in the data collected through the above sources, the data from some datasets were prioritised over others, based on perceived accuracy of the data collection method. Generally, GHGVS Scheme data / TrustMark data were considered the most trustworthy, followed by EPC data and finally the data collected through the applicant survey. However, for some variables, this hierarchy changed, based on reviewing the data available from the data sources for each of the key modelling inputs. For example, for dwelling characteristics such as the dwelling age and floor area, EPC data was prioritised over Scheme

data, as these types of characteristics are unlikely to change over time. Loft insulation, on the other hand, can easily become outdated on an EPC, and so Scheme data was often considered to be more accurate.

Where no data were available from any of the above sources, values were imputed using BRE's imputation model. This imputation process uses data from the English Housing Survey to determine the likely distribution of energy efficiency measures and building features, based on key characteristics of the property (such as dwelling type and tenure) and geographical location.

Annex 6: Non-applicant stimulus materials

The following stimulus materials were used during the research interviews with non-applicants. The aim of these materials was to provide an overview of the Scheme and simulate initial steps that a potential applicant might take via the government website and SEA website.

1. Summary of the Green Homes Grant Voucher scheme

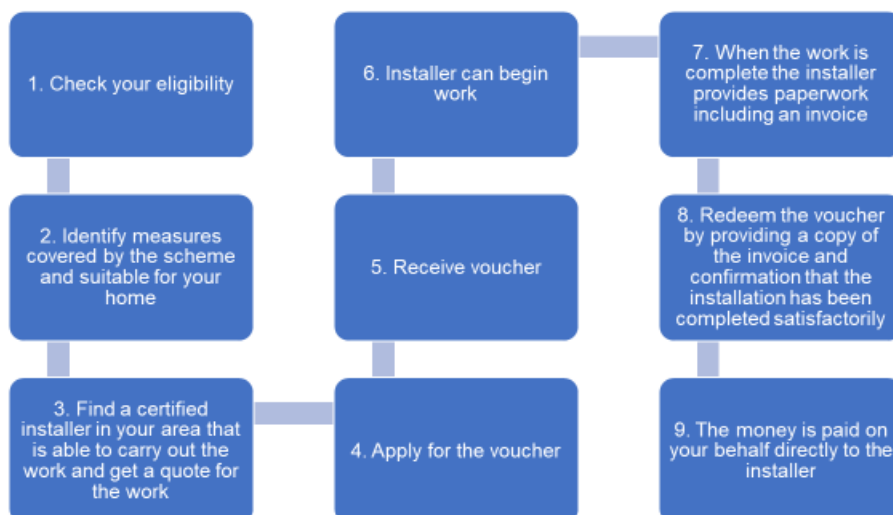
What is the Green Homes Grant Voucher scheme?

- Homeowners and landlords in England can apply for a **voucher towards the cost of installing an energy efficiency improvement** to their home.
- These energy efficiency improvements **could help save up to £600 a year** on energy bills.
- The government will provide a voucher that **covers up to two thirds of the cost** (with a maximum voucher value of **£5,000**) of an energy efficient improvement to your home.
- If someone in the household receives a qualifying benefit, they may receive a voucher that covers 100% of the cost of installing an energy efficient improvement up to a maximum value of £10,000.

What energy efficiency improvements are included?

- Vouchers must be used to install at least one **primary measure**:
 - Improving the **energy efficiency** of your home by installing **insulation** (e.g. loft insulation or solid wall insulation)
 - Updating your **heating system** with a **low carbon heating** alternative (e.g. air source heat pump or biomass boiler)
- Once one of these primary measures is installed as part of this scheme, you can use your voucher to help cover the cost of a **secondary measure**:
 - Improving the **energy efficiency** of your home by **replacing/ updating windows and doors**
 - Improving the **energy efficiency** of your **heating system** (e.g. hot water tank insulation, smart heating controls)
- The amount of money towards any secondary measure cannot be more than the money provided towards installing the primary measure. For example, if you receive £500 towards loft insulation, you will be able to receive a maximum of £500 towards a secondary measure.

2. Overall process



The voucher is valid for 3 months from the date they are issued or until 31 March 2022 (whichever date is earlier)

3. Eligibility

You may be eligible if you:

Own your own home (including long-leaseholders and shared ownership)

Your own your own park home on a residential site (including gypsy and traveller sites)

You're a residential landlord in the private or social rented sector (including local authorities and housing associations)

Homeowners and landlords cannot get the Green Homes Grant for newly-built homes that have not been previously occupied

You check your eligibility by completing some questions on the Government Green Homes Grant Voucher scheme website.

4.a Home improvements: types of measures

Home improvements are split into primary and secondary measures and the voucher must be used for at least one primary measure.

Primary measures include:
Improving the energy efficiency of your home by installing insulation

- Solid wall insulation
- Cavity wall insulation
- Under-floor insulation
- Loft insulation
- Flat roof insulation
- Pitched roof insulation
- Room in roof insulation
- Insulating a park home

Updating your heating system with a low carbon heating alternative

- Air source heat pump
- Ground source heat pump
- Solar thermal
- Biomass boiler
- Hybrid heat pump

Secondary measures include:
Improving the energy efficiency of your home by replacing/updating windows and doors

- Draught proofing
- Double or triple glazing to replace single glazing
- Secondary glazing
- Energy efficient replacement doors

Improving the energy efficiency of your heating system

- Hot water tank thermostat
- Hot water tank insulation
- Heating controls (e.g. smart heating controls, thermostatic radiator valves)

4.b Home improvements: advice for applicants

You can get advice for which home improvements are suitable for your property on the government endorsed Simple Energy Advice website. The site will ask a number of questions about the property size, age, type of heating and type of insulation.



Enter your postcode for personalised advice

Telling us your postcode and address lets us find information about energy efficiency at your property from previous surveys. It also means we can show you relevant information, such as grants that might be available in your area.

>

4.b Home improvements: advice for applicants

This will generate some suggestions for the types of measures you could consider installing in your home e.g.:

Fund improvements with the Green Homes Grant				
<p>To be eligible, you must add at least one GHG ELIGIBLE (PRIMARY) measure to your plan.</p> <p>If you do this, any primary or secondary measures added to your plan may be partially covered under the Green Homes Grant. Note that the subsidy for secondary measures is capped at the value of the subsidy provided for primary measures.</p> <p>What are primary and secondary measures?</p> <p>Primary measures refer to home insulation and low carbon heat measures. Secondary measures refer to additional energy saving measures, including improvements to windows and doors, as well as heating controls.</p>				
 <p>Solid wall Insulation</p> <p>Specialist companies can add insulation to the inside or outside surface of your walls to help keep your home warm and cut your heating bills.</p> <p>GHG ELIGIBLE (PRIMARY)</p>	?	<p>INVESTMENT REQUIRED</p> <p>£9000</p>	<p>SAVINGS PER YEAR UP TO</p> <p>£40 - £50</p>	<p>SHOW ME HOW</p> <p>+</p>
 <p>Floor insulation (for a suspended floor)</p> <p>Adding insulation to a suspended wooden floor is an effective way to reduce the heat loss of your home, especially if you have already installed loft and wall insulation. It is advisable to seek professional advice and you must use an approved installer.</p> <p>GHG ELIGIBLE (PRIMARY)</p>	?	<p>INVESTMENT REQUIRED</p> <p>£1000</p>	<p>SAVINGS PER YEAR UP TO</p> <p>£20 - £30</p>	<p>SHOW ME HOW</p> <p>+</p>

This publication is available from: www.gov.uk/government/publications/green-homes-grant-voucher-scheme-evaluation

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