Department for
Energy Security
& Net Zero

Evaluation of Phase 3 of the Public Sector Decarbonisation Scheme

Process evaluation report (Phase 3a and 3b)

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Executive summary

The Public Sector Decarbonisation Scheme (PSDS)[1] provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures. The Department for Net Zero and Energy Security (the Department) has commissioned a consortia of independent research organisations[2] to conduct two evaluations of the PSDS – one of Phase 1, the other of Phases 2 to 3c.

This report – written by the independent research consortia - is part of the process, evaluation of Phases 2 and 3 of the PSDS. It is drawn from the first stage of this evaluation, comprising two waves of data collection[3] and analysis across 2022-24.

Data collection comprised qualitative interviews and workshops with over 150 individuals across various groups, including: PSDS and LCSF grant recipients, non-funded applicants, eligible non-applicants, PSDS and LCSF contractors helping grant recipients to deliver works, Salix, and Department representatives. A quantitative survey of 67 Phase 3a 'single year' projects was conducted in Autumn 2023.

Due to the stage of Phase 3 project delivery, the report focuses on findings related to the process evaluation, though some observations on early outcomes are included.

Scheme design and the application stage

Applicants to PSDS Phases 3a and 3b were largely comfortable with the application process, particularly the increased scrutiny of certain elements, to filter more speculative applications. However, some applicants found the new application form requirements (particularly around existing building schematics and sourcing of quotes) challenging and time consuming.

Through funding the production of Heat Decarbonisation Plans (HDPs), the Low Carbon Skills Fund (LCSF) was felt by recipients to have been very important in establishing an overall direction of travel on decarbonisation, as well as identifying priorities in terms of building and measure selection. It was noted – by both LCSF recipients and contractors - that HDP quality has been variable (particularly in providing the type of information required for PSDS applications); several suggested that a benchmark or template for HDP content could be established.

Applicants in Phases 3a and 3b of the PSDS were generally positive about the changes to scheme rules since Phase 1 of the PSDS. In particular, public sector organisations welcomed the option of applying for project funding across multiple years (including the provision of a

[1] https://www.gov.uk/government/collections/public-sector-decarbonisation-scheme
[2] Winning Moves, in partnership with CAG Consultants and University College London.
[3] Qualitative interviews and workshops with over 150 individuals across various groups, including: PSDS and LCSF grant recipients, non-funded applicants, eligible non-applicants, PSDS and LCSF contractors helping grant recipients to deliver works, Salix, and Department representatives. A quantitative survey of 67 Phase 3a projects was conducted in Autumn 2023.

'Planning Year' option in Phase 3b), and the principle of soft sector caps. The rationale for all rule changes was generally understood, though the stricter Carbon Cost Threshold (CCT)[4] and perceived focus on heat decarbonisation were felt by some applicants to constrain optimal measure selection (i.e. energy efficiency / fabric measures).

The 'first come first served' approach[5] to awarding funding, and the 31 March deadline for delivery of the PSDS-funded elements of single year projects, continue to be perceived negatively amongst applicants and contractors. Both aspects were felt, by a number of interviewees across respondent groups, to be encouraging applicants to opt for more straightforward projects. This in turn was felt to be potentially undermining the achievement of PSDS objectives by restricting the opportunity for larger / more complex measures which may have delivered greater carbon reduction benefits. It should be noted that evaluation participants were invited to suggest alternative approaches to fund allocation, and almost all ideas were acknowledged to raise new potential issues / imbalances. Changes to approach throughout Phase 3, where 'first come, first served' has continued to be used, but alongside stricter scrutiny in the application process[6] and soft sector caps, seem to have started to address stakeholder concerns.

Eligible non-applicant respondents seemed to be discouraged from applying mainly by the perceived overall level of resource (both person time and information) required to apply for PSDS funding. For some, this was exacerbated by uncertainty of the application being successful, especially in the context of the 'first come, first served' approach to allocation.

Experiences of project delivery and management

The majority of Phase 3a and 3b projects have encountered – to some extent - delays and cost inflation, with more than a tenth being abandoned subsequent to grants being offered. Most (55%) of the Phase 3b single year projects were (as of March 2024 progress reporting to Salix) expected to complete[7] by 31 March 2024, the deadline for grant spend.

When asked about factors that would best ensure the successful delivery of PSDS projects, grant recipients emphasised the benefits of long-established relationships with contractors, with good knowledge of sites and buildings, thereby improving identification and avoidance of risks. Several grant recipients observed that larger, well-connected contractors were better able to secure equipment and / or kit that might be in short supply. Grant recipients and PSDS contractors also emphasised the value of engaging with key stakeholders, such as Distribution Network Operators (DNO) and local authority planning departments, as early as possible, as

[4] Introduced in Phase 2 of PSDS.
[5] This approach in Phases 1 to 3 of the PSDS was as follows: applications were reviewed, through a rigorous technical eligibility check, in the order in which they were received. Assuming they were eligible / compliant, the applicant was offered funding (though not necessarily the amount requested in the application). If there were queries / concerns on the project arising from the review, these were raised with the applicant organisation and either resolved, or the application was withdrawn / rejected. This process continued, with reviews commencing in the order in which applications were received, until the funding for that phase or sub-phase was allocated.
[6] Meaning funding is not allocated to sub-optimal projects.
[7] For the purposes of Salix scheme delivery and monitoring, 'complete' refers to the grant spend being drawn down, not necessarily all funded measures on the project being operational.

well as conducting robust site surveys and detailed design work before the project commences.

Challenges in delivery of Phase 3a and 3b projects have been similar to those encountered in Phases 1 and 2 – in particular difficulties in obtaining skilled contractors and equipment (especially air source heat pumps (ASHPs)), planning permission, and timescales for DNO work. Cost inflation has been raised as an issue throughout the PSDS, attributed in part to PSDS funding creating a sudden and time-limited spike in demand for contractors and equipment. However, Phase 3 grant recipients and contractors have suggested that the effect of cost inflation on project delivery has been exacerbated by challenges in the wider economic climate, coupled with the application rules around CCT and applicant contributions. Grant recipients appreciated the flexibility of the scheme in terms of being able to submit change requests, though some found this process quite onerous and subject to significant delays.

Overall, almost all grant recipients interviewed in this stage of the evaluation felt that, to date, contractor work has been of good quality with no notable issues. However, many projects are not yet complete; proof of quality will evidenced by how well measures operate and the impacts delivered.

The project monitoring and reporting processes were generally felt by participants to have worked well. Grant recipients valued having a dedicated Salix account manager[8], and many commented that these managers had been helpful and responsive throughout. However, monthly monitoring and reporting was felt by some participants, especially those encountering significant delays, to be burdensome.

Early project outcomes

Whilst more robust information on this is expected in later stages of the evaluation, responses to the Phase 3a single year project survey indicate that most Phase 3 single year projects are expecting, and some have already seen, a wide range of beneficial impacts.

At this stage, Phase 3a single year project survey respondents were more likely to recognise organisational benefits around improved knowledge and engagement. Whilst some respondents also acknowledged more tangible benefits (e.g. reduced energy consumption and energy / maintenance costs), most did not yet feel yet able to quantify these.

In terms of supply chain effects, particularly on the heat pump supply chain, the consensus amongst interviewed stakeholders and industry representatives was that PSDS is currently key to sustaining the existing UK heat pump market.

[8] Each PSDS grant recipient is allocated a representative of Salix to provide coordination of project reporting and monitoring, as well as act as a point of contact for any queries and clarifications throughout project delivery.

PSDS importance

Overall, responses from Phase 3a and 3b grant recipients indicate that PSDS continues to be seen as vital in enabling many public sector organisations to invest in heat decarbonisation, in particular costly low carbon heating measures such as heat pumps. As well as providing funding to make projects viable, PSDS was felt by some grant recipients to be valuable in providing structure and impetus to projects.

Interviews with non-participant public sector organisations highlighted that there is some level of heat decarbonisation and energy efficiency measure installation happening concurrent to PSDS-funded activity, though typically more focused upon lower cost measures with quicker payback timeframes e.g. solar PV and LED lighting. These were often energy efficiency measures that are not the focus of PSDS anyway.

Overall assessment against the relevant evaluation Higher-Level Questions (HLQs)

HLQ 1: How effective is the application process and scheme delivery for Phase 3 of the PSDS, and Phases 2 and 3 of the LCSF?

'Effectiveness' can only be fully assessed when taking into account the outcomes the process has delivered. Focusing on the way they have operated, overall the application, funded project support and monitoring processes seem to have been effective in supporting the objectives of the PSDS. As outlined in sections above:

- Albeit there remained concerns about the 'first come, first served' approach, the application stage has processed large numbers of applications and resulted in a range of organisation and project profiles.
- LCSF-funded work was felt by many recipients to have been influential in enabling and / or improving the design of projects and PSDS applications.
- Salix monitoring and communications – particularly the key account manager role – have worked well, though there would seem to be the potential for specific elements (e.g. processing of change requests and queries) to be more efficient.

HLQ 2: How have the changes from Phases 1 and 2 of the PSDS (and any further changes between Phase 3 subphases) affected the delivery of the scheme and responses to it?

Almost all changes introduced to the scheme since Phases 1 and 2 of the PSDS have been welcomed by participant public sector organisations and wider stakeholders. Respondents have understood the rationale for the changes and largely agree with them. Overall, stakeholders seem to perceive Phase 3 of PSDS as a fairer process, with greater scrutiny of applications pre-award, and sector caps ensuring that funding is distributed more equitably across different sectors and organisation sizes.

The only significant issues raised related to changes introduced in Phase 2 – the CCT of £325/tCO_2 (particularly in the context of substantial cost increases more generally) and the greater emphasis on heat decarbonisation (seen to limit necessary energy efficiency / building fabric action).

HLQ 3: What are the wider lessons for the scheme and for energy policy for the public sector?

There are a number of aspects of PSDS design and delivery that grant recipients and contractors felt worked well. Findings illustrate the ongoing importance of the PSDS to the public sector in delivering decarbonisation. Public sector organisation and contractor suggestions on how the PSDS and wider policy could be enhanced should be viewed in this context. Key suggestions were as follows:

- **Adjusting scheme timescales for installation of funded measures and grant payment;** many stakeholder (applicant, non-applicant and contractor) issues with the annualised timescales for delivery are addressed by a multi-year allocation; **respondents also suggested staggering application windows across the year**.
- **Re-assessing the 'first come, first served' approach to grant allocation,** whilst considering the relative value of alternative approaches. Suggestions for alternative approaches included more frequent rounds of funding, a two-stage application process, and a greater emphasis on quality (by which respondents seemed to mean deliverability and reliability of projected impacts) when ranking applications.
- **Greater medium-term certainty on further rounds of PSDS**, providing greater confidence for both public sector and contractor investment, and alongside this, a clearer roadmap and timeline from the Department on when various schemes will be available, for what measures, and to what value. Provision of PSDS funding has now been promised up to and including the 2027/28 budget year[9].
- Whether as part of PSDS or more widely, Salix / the Department could facilitate:
    - **A centralised framework of approved contractors to deliver decarbonisation works**, better ensuring quality, reducing per project administration and potentially reducing costs.
    - **Networking opportunities for public sector organisations** delivering – or planning to deliver – decarbonisation projects, to build understanding of how to deliver projects and what the pitfalls may be etc. through peer-to-peer learning.
    - **Provision of loan funding**, particularly for the building fabric / energy efficiency measures decreasingly supported by PSDS[10].
    - **Amalgamation of the various funding streams** available to different types of public sector organisation, which may bring efficiencies and enable more ambitious / larger scale projects.

[9] Details of Phase 4 of the Public Sector Decarbonisation Scheme - GOV.UK (www.gov.uk)
[10] Across a number of interviews in the evaluations of PSDS Phases 1,2 and 3, grant recipients and contractors have directly requested a revival of the Public Sector Energy Efficiency Loans Scheme.

1: Introduction

1.1: The Public Sector Decarbonisation Scheme (PSDS)

1.1.1: Overview

The Public Sector Decarbonisation Scheme (PSDS)[11] provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures[12]. The PSDS supports delivery of the UK's ambitious goal to become net zero by 2050 and the Net Zero Strategy[13] goal to reduce direct emissions from public sector buildings by at least 50 percent by 2032, and by 75 percent by 2037, compared to a 2017 baseline. The scheme will reduce carbon emissions from the public sector, contributing to meeting Carbon Budgets 4, 5 and 6. The scheme is managed by the Department for Energy Security and Net Zero ('the Department') and is delivered by the Department's non-departmental public body, Salix Finance Ltd ('Salix').

Phases 1 and 2 of the scheme provided £1.075 billion in grants over the financial years 2020/21 and 2021/22. Phase 3 of the PSDS is providing £1.425 billion of grant funding over the financial years 2022/23 to 2024/25[14].

Phase 3 funding is being allocated through multiple application windows; Phases 3a and 3b are covered in this evaluation report. Phase 3c will be explored in evaluation activity across 2024/25. Table 1 provides a summary of the timings and allocation of the Phase 3 rounds:

Table 1: Overview of Phase 3 timings, applications and awards

	Key timings	Applications	Awards
Phase 3a	Opened for applications October 2021. Funding provided over 2022-25.	381 applications	£613.2m awarded to 231 projects (i.e. the proposed decarbonisation actions – measures and buildings – included in the application), to be delivered by 170 public sector organisations.

[11] https://www.gov.uk/government/collections/public-sector-decarbonisation-scheme
[12] 'The term 'measures' is used throughout this report to refer to the technologies being installed as part of the PSDS-funded project.
[13] https://www.gov.uk/government/publications/net-zero-strategy
[14] Some of the funding allocated in a specific Phase is expected to be spent / paid across later financial years as part of 'multi-year' projects. All of the £1.425 billion allocated needs to have been spent by 31 March 2025. A separate financial settlement has resulted in a further £335m being directed to Phase 3c only, to be spent in 2025/26.

Phase 3b	Opened for applications October 2022. Funding provided over 2023-25.	560 applications	£604m awarded to 231 projects, to be delivered by 183 public sector organisations.
Phase 3c	Opened for applications October 2023 (and reopened November 2023 after issues with the portal). Funding provided over 2024-26.	443 applications	611m awarded to 244 projects, to be delivered by 209 public sector organisations.

1.1.2: Eligibility

Phases 3a and 3b were open to public sector bodies that are contracting authorities in England[15], as defined in the Public Contracts Regulations 2015. This covers central government departments and their non-departmental public bodies, the NHS, schools (including maintained schools and academies), emergency services, further and higher education and local authorities.

To support the primary aim of heat decarbonisation, applicants were required to focus on replacing end-of-life fossil fuel heating systems with low carbon heating systems such as heat pumps and connections to low carbon heat networks. All applicants were required to include at least one measure to decarbonise part of or all the heating within a building with a low carbon heating system. Applicants were also required to take a whole building approach to decarbonising their buildings, looking at the overall energy usage and combining energy efficiency measures with the most appropriate low carbon heating measures. This reduces the size and cost of the heating system required, by lowering the heat and energy requirements of the building; it also helps to counteract increases in running costs from the new system.

Eligible measures could fall into four categories:

- It was compulsory to include a low carbon heating measure that reduces direct carbon emissions, such as heat pumps, electric heating or district heating.
- Other measures that reduce direct carbon emissions, such as solar thermal, building fabric upgrades, piping insulation, mechanical ventilation, and heat recovery.
- Measures that reduce indirect carbon emissions (typically through electricity savings) such as solar PV, LED lighting and energy efficient ventilation
- Measures that do not save carbon directly, but enable the installation of measures that do, such as electrical infrastructure upgrades, metering (which also may encourage changes in energy use behaviour), and energy storage.

[15] Central government departments operating in areas of reserved policy (i.e. not devolved to Scottish or Welsh Governments or the Northern Ireland Executive) were also eligible to apply for funding for estates located anywhere within the UK.

Whilst inclusion of measures from the second, third and fourth categories was optional, applicants were encouraged to consider them as part of taking a 'whole building' approach to decarbonisation.

Funding was provided for the marginal costs of installing a low carbon heating system (i.e. the additional costs on top of the business-as-usual costs of replacing the existing fossil fuel heating system on a like-for-like basis).

The key changes in PSDS design, rules and delivery subsequent to Phase 1 were as follows:

- From Phase 2 onwards:
    - A greater emphasis upon funding and installation of heat decarbonisation rather than energy efficiency measures, with an expectation of applicants evidencing 'fabric first'[16] approaches to buildings. This included energy efficiency measures being ineligible for funding if the building they were to be installed in was not served by a low carbon heating system.
    - Emphasis upon replacing 'end of life' heating systems[17]; linked to this, a requirement for applicants to contribute to projects the amount it would have cost to replace their 'end of life' heating system with 'like for like'[18] technology.
    - Reduction of the Carbon Cost Threshold (CCT)[19] from £500/tCO_2 in Phase 1 to £325/tCO2 in Phases 2 and 3.
- From Phase 3a onwards:
    - A separate allocation of funding for 'multi-year' projects; 15% of the budget in 2022/23 was set aside for larger and more complex projects where the heating system is expected to come to the end of its working life in 2023/24 or 2024/25 and / or where building fabric measures need to be completed in advance.
    - Removal of the maximum funding caps, i.e. the amount that could be awarded per project. However, these were only in place for Phase 2 of the PSDS as this was a much smaller allocation of funding; they were not in place in Phase 1.
- From Phase 3b onwards:

[16] In this context, a 'fabric first' approach involves maximising the energy performance of a building through measures that reduce its energy consumption (e.g. insulation), before considering the use of technology / installations that decarbonise the energy used (but don't necessarily reduce it).
[17] Systems reaching the end of their anticipated operational period. This can vary by both measure and model, and equipment may well continue working beyond this point, but this is not guaranteed. The rationale for this rule in PSDS is to minimise waste / inefficiency arising from any organisations seeking to replace relatively new equipment (with years of effective operation still expected).
[18] Organisations would have had to replace old systems at some point, so a certain cost would have arisen anyway. To maximise efficient use of the PSDS funds, applicant organisations were therefore expected to contribute the equipment replacement costs that would have arisen in a 'business as usual' scenario.
[19] A calculation of the cost per tonne of direct carbon saved for the measures being installed through the funded project.

- The introduction of 'soft[20] sector caps' to support the allocation of funding across the public sector broadly in line with the distribution of carbon emissions across the public sector. Soft sector caps were implemented across three areas of the public sector: health, education, and all remaining sectors including local authorities. An upper limit to all sector caps was set at 35% of the total phase 3b budget. Under this approach, the maximum funding a sector could be allocated was 35% and no sector's soft cap allocated funding could be lower than 30% of total Phase 3b funding. The introduction and encouragement of 'planning years' for applicant projects that may not be ready to commence works on site within the 'single year' timeframes. Organisations were able to apply for funding for the financial year 2024/25 only, allowing them to use the 2023/24 financial year to plan their project to better enable successful implementation during the subsequent financial year.

1.1.3: The Low Carbon Skills Fund (LCSF)

The Public Sector Low Carbon Skills Fund (LCSF) provides grants for public sector bodies to access skills and expertise to unlock heat decarbonisation on their estate. This is then expected to put them in a stronger position to take the next steps in decarbonising, including enabling them to develop detailed project proposals with which to apply to future grant funding for capital decarbonisation measures, such as the PSDS. Phases 2-4 of the LCSF (£15m in 2021, £14.5m in 2022, and £17m in 2023) have funded 341 projects.

Phase 1 LCSF funded a broad range of support including project development, project delivery and heat decarbonisation plan support, whereas subsequent phases have been specifically intended to support the development of heat decarbonisation plans (HDPs). This ensured organisations had a robust heat decarbonisation plan to take the next steps in decarbonising.

1.2: The evaluation of the PSDS and the LCSF

1.2.1: Overview

The Department is conducting monitoring, and has commissioned an evaluation, concurrent with delivery of Phase 3 of the PSDS, covering both this and Phase 2[21]. A consortium of Winning Moves Ltd., CAG Consultants, and UCL is conducting this evaluation. The evaluation will comprise multiple further stages of data collection and analysis with an increasing focus on impact.

[20] 'Soft' meaning that if insufficient eligible and complete applications within a particular sector result in that sector soft cap not being filled, any unallocated funding from within that sector soft cap can be allocated to other sectors – even if by doing so, those other sectors then exceed their soft sector caps.
[21] Specifically Phase 2 impacts. There is a separate ongoing evaluation of Phase 1 of the PSDS, being delivered by the same consortium.

The full set of evaluation objectives / questions are provided in the technical annex to this report. The key questions explored for this interim report, which focuses principally upon process evaluation questions, were as follows:

- The effectiveness of the delivery of Phase 3a and 3b of the PSDS[22], including the launch and application process, award process, monitoring, and Salix management overall.
- Why organisations applied to Phase 3a and/or 3b of the PSDS, i.e. the importance of PSDS to the project and what would have happened in its absence.
- How applicants formulated Phase 3a and Phase 3b projects, including measure and building selection, consideration of – and preparation for – risks to delivery, and approaches to procurement.
- How Phases 2-4 of the LCSF supported the development of organisations' HDPs, and informed applications to Phase 3a and 3b of the PSDS.
- Phase 3a and 3b grant recipient experiences of the delivery of funded projects, including challenges encountered (both expected and unforeseen), mitigations of those challenges, and success factors.
- Stakeholder views on – and evidence of the effects of – changes to PSDS rules between Phase 1 and Phase 3b.
- Early indications (from Phase 3a single year projects only) of project outcomes.
- Wider lessons for the PSDS and LCSF programmes, and around energy policy and public sector decarbonisation more generally.

1.2.2: Stage 1 evaluation activity

This report is the second interim output from the evaluation, reflecting activity conducted across the first stage of the evaluation. This comprised two 'waves' of data collection and analysis; wave 1 from February – May 2023, wave 2 from September 2023 to March 2024. The individual elements that have contributed to the findings are summarised below. A fuller description of these is provided in the technical annex to the report. Across all interviews, the evaluation team sought a range of respondent profiles – in terms of sector, region and project value.

[22] And, where relevant, for Phase 2 of the LCSF.

Table 2: Summary descriptions of evaluation elements that have fed into the report

Evaluation element	Interview number	Description
Public sector organisations		
Single year grant recipients (qualitative)	71	Qualitative interviews with representatives of single year grant recipient organisations, exploring their experiences of project design, applications and delivery. These have been supplemented by three workshops exploring more overarching questions around PSDS rules and policy to support decarbonisation.
Single year grant recipients (quantitative)	67[23]	Wave 2 included a quantitative telephone survey of grant recipients for single year projects funded in Phase 3a, exploring project progress and any early observed outcomes.
Multi-year project stakeholders	39	Qualitative interviews – at multiple points - with multi-year project stakeholders to inform case studies of multi-year funded projects; these explored similar areas to the interviews with single year recipients, with some discussion of the benefits / importance of the multi-year option.
Abandoned projects	6	Finally, a small number of qualitative interviews were conducted with Phase 3a and 3b grant recipients that abandoned funded projects.
Unsuccessful PSDS applicants	28	Semi-structured interviews, in wave 1, with organisations that applied to Phase 3a but were not awarded funding, exploring their experiences of the application process, views on the award decision, and subsequent decarbonisation activity.
Unsuccessful LCSF applicants	10	In wave 2, semi-structured interviews were conducted with organisations that had applied for, but were not awarded, funding under the LCSF.
Eligible non-applicants	10	In wave 1, semi-structured interviews with public sector organisations that were eligible to apply for PSDS funding but had not done so at the time of fieldwork. Interviews explored their awareness and perceptions of the PSDS, the reasons they had not applied for funding, and decarbonisation activity not funded by the scheme.

[23] Representing a 49% response rate of those eligible to be contacted.

Supply chain		
Contractors working on PSDS-funded projects	25 (+2 workshops)	Qualitative interviews, and two workshops, with contractors working on Phase 3 projects. Interviews covered their experiences of project delivery, in particular risk management, challenges encountered and mitigation strategies.
Contractors working on LCSF-funded projects	21	Qualitative interviews with consultants delivering LCSF funded work, exploring the value of the work and the effect on public sector capacity for future decarbonisation projects.
Wider supply chain	5	Qualitative interviews with organisations well placed to provide an overview of the effect of PSDS on the decarbonisation / retrofit supply chain.
Programme team / stakeholders		
Department for Energy Security and Net Zero	2 (+1 workshop)	Qualitative interviews and a workshop with representatives of the, exploring views on the applicant profile, the effect of PSDS rule changes, delivery of the scheme, and how PSDS and LCSF could further support decarbonisation.
Salix	6	In wave 2, qualitative interviews with Salix representatives, exploring perceptions of delivery to date, successes and challenges
Third Party Technical Assessors (TPTAs)	2 workshops	Workshops with TPTAs that reviewed Phase 3a and 3b applications for Salix, exploring views on application quality, reflections on skills gaps, the effect of PSDS rule changes and eligibility criteria.

The evaluation to date has also comprised desktop review and analysis of the following:

- The database of applications[24] submitted for Phase 3a and Phase 3b funding.
- The database of awards of Phase 3a and Phase 3b funding.
- Salix reporting of funded project progress to the Department (as of January 2024).
- PSDS and LCSF guidance documents, application forms and funding summaries.

[24] All application, grant award and project monitoring data were provided by the Department.

1.2.3: Limitations / things to note

There are several limitations that should be noted when interpreting the findings in this report:

- **Scope** – this second interim findings report is focused upon Phase 3a and 3b delivery. In addition, the findings are *mainly* focused on the process evaluation questions of interest to the Department, although some statistics from the quantitative survey of Phase 3a single year projects, which explored early outcomes, are also included here. As described in section 1.2.1, later stages of the evaluation will generate findings pertaining to (a) Phase 3c; (b) multi-year projects; and (c) the impact and economic evaluation questions.
- **Timing** – at the time of interview, many Phase 3a and 3b funded projects had yet to be completed. This meant certain questions (e.g. on post-installation quality) could only be answered by proportions of the respondent sample. In addition, few projects had been completed for a sufficient amount of time to provide authoritative assessment – particularly quantification - of post-installation impacts (e.g. effects on energy costs). Such questions will be re-visited in later stages of the evaluation.
- **Statistical significance** – databases of Phase 3a and 3b applicants and awards have been shared with the evaluation consortium and analysed by the team to generate high-level insights on participant profiles, experiences and delivery. With the exception of the quantitative survey of Phase 3a single year participants[25], and analysis of scheme databases, the majority of data underpinning this report have been obtained from a sample of qualitative interviews and discursive workshops (as outlined in section 1.2.2). Whilst interviews sometimes comprised good proportions of their populations[26], they are not intended to provide statistically robust results or percentages on key questions. It is therefore not always possible to draw representative conclusions from the interviews. It is anticipated that these will be generated by further quantitative surveys, including remote 'post-completion' surveys[27], conducted in later stages of the evaluation.
- **Recall** – there are four aspects to this:
    - The time between respondents' experience of some parts of the PSDS process and this round of evaluation interviews (around 18 months for some applicants) meant it was difficult for some respondents to recall details of these elements.
    - Where respondents had been involved in multiple Phases of PSDS, some struggled to disaggregate experiences between Phases**.** Interviewers sought to mitigate this through clear description of the projects respondents should be focusing on, and asking respondents to report their experiences in relation to those projects.

[25] Whilst the telephone survey secured responses from almost half of Phase 3a single year grant recipients, the number of completed interviews (67) did not allow for statistically robust comparisons between different respondent groups.
[26] For example, interviews were conducted with 46 (27%) of the 170 organisations awarded PSDS Phase 3a funding; a further 14 (8%) of Phase 3a funded organisations were consulted in workshops.
[27] An online survey circulated to all PSDS projects – across Phases 1-3 – that are known to be complete, and therefore, in theory, seeing impacts. The survey explores outcomes arising from projects and seeks quantification / evidence of these where possible.

Interviewers assess that respondent confusion has not been widespread and is therefore unlikely to have had a substantive impact on findings reported.

- Respondent role; some respondents, whilst still being the recognised ‘project lead’ for their organisations, were either not closely involved, or not involved at all, in particular elements of the process**.** There were therefore some areas these respondents could not provide informed opinions on, although they were encouraged to share any feedback from colleagues.
- Linked to this, in a small number of cases the original ‘lead’ contact for an organisation had moved on**;** their replacement had not always been involved in the PSDS application process or delivery prior to this move, so was not able to comment authoritatively on certain aspects.

2: Scheme design and application stage

Based on analysis of PSDS application data and stakeholder interviews, this Chapter provides an assessment of the PSDS Phase 3a and Phase 3b application processes.

Scheme promotion

Most applicants agreed that the promotional activity for Phase 3a and 3b had been adequate; non-applicants were aware of Phase 3a when interviewed[28].

Applicants (whether awarded funding or not) were overwhelmingly positive about both the published guidance and webinars that were provided to support applications following the launch of the Phases.

Application form requirements

Applicants to PSDS Phase 3a and Phase 3b, especially those familiar with Phase 1, were largely comfortable with the application process. Several grant recipients particularly welcomed the increased scrutiny of certain elements of project delivery plans in the application process (e.g. evidence of DNO engagement). They felt that this filters out more speculative applications and ensures project teams considered certain risks; though as reported in Chapter 3, project issues tended to relate to the severity of certain risks being greater than anticipated, rather than grant recipients failing to anticipate them at all.

Some applicants found the new application form requirements – particularly around existing building schematics and sourcing of quotes – challenging and time consuming. Some also questioned the value of the cost estimates in light of the potential for substantial changes in these between application and award.

LCSF influence on projects

Through funding the production of HDPs, LCSF (across Phases 2 – 4) was felt by recipients to have been very important in enabling organisations to establish an overall direction of travel on decarbonisation, as well as identifying buildings and measures to be prioritised for future projects.

Scheme rules and influence on project profile

The rationale for PSDS rules was generally understood, and several changes (particularly the introduction of a multi-year funding allocation) were welcomed. Whilst there was some indication of limited awareness of soft sector caps and planning years, all participant respondents (whether PSDS recipients or contractors) asked about these felt they were positive changes. The focus on heat decarbonisation has continued the prioritisation of low carbon heating measures, in particular ASHPs. However, the CCT, and applicant understanding that there was a requirement for them to contribute to

[28] We did not interview non-applicants with respect to Phase 3b

energy efficiency measures, were felt to have made certain improvements to building fabric even more challenging. The CCT level was also felt by some to be unhelpful in the context of high inflation and rising project costs.

As found in the evaluation of Phase 1 of the PSDS, two elements of the scheme - the 'first come first served' approach to awarding funding[29], and the annual deadlines for delivery of PSDS-funded elements of (single year) projects - continue to be perceived negatively by a number of interviewees across respondent groups. Both aspects were felt to be discouraging complex projects, as well as potentially disadvantaging less experienced and / or less well-resourced organisations. This in turn was felt to be potentially undermining the achievement of PSDS objectives i.e. more complex measures may have delivered greater carbon reduction benefits e.g. ground source heat pumps (GSHPs) instead of air source heat pumps (ASHPs).

There is evidence (discussed in this chapter) that organisations with fewer resources feel discouraged from applying to PSDS due to the resources required to formulate eligible projects and complete applications, and the risk of not receiving funding.

2.1: Context: application and applicant profiles

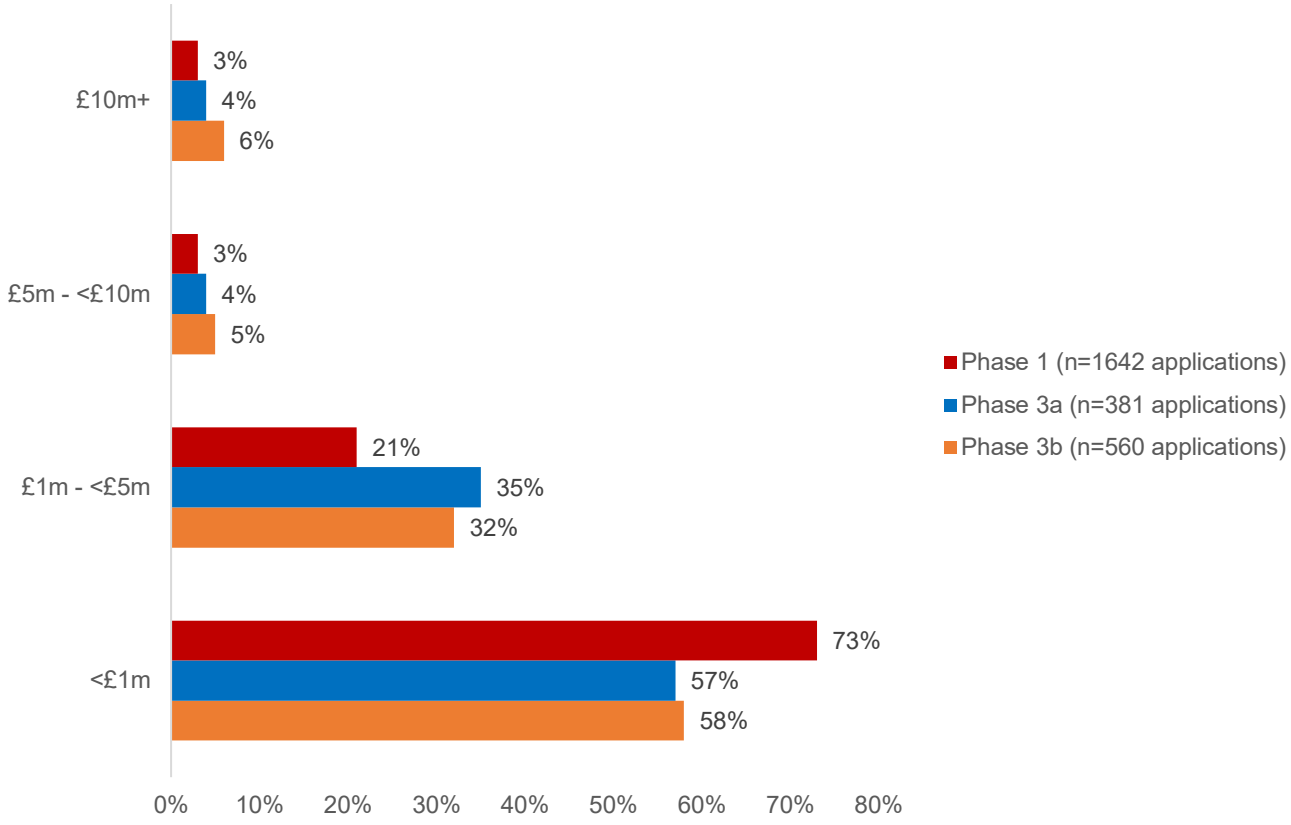
This section provides an overview of the Phase 3a and 3b applicant and application profile, including comparison to equivalent Phase 1 statistics.

The following charts compare the profile of applications and applicants across Phases 1, 3a, and 3b[30]. There are some limitations to direct comparison of applicant and application profile. Phase 1 comprised a larger amount of available funding and was unprecedented as a national grant for public sector decarbonisation. Many public sector organisations believed that it was a one-off stimulus linked to COVID recovery, potentially increasing the motivation to apply. In contrast, individually, Phases 3a and 3b comprised a smaller allocation and were generally known *not* to be a one-off or final round of funding; this means organisations may have been (and many have reported this) more focused on preparing for an application to later phases. Most non-applicant respondents interviewed in wave 1 were intending to apply to future rounds of the PSDS (e.g. once their heat decarbonisation plans were finalised); one didn't apply for Phase 3a because they were still focusing on delivering a Phase 1 funded project.

For context, Phase 3b comprised 560 applications with a value of over £1.48bn. As in Phases 1 and 3a, the scheme was significantly oversubscribed.

[29] Explored further in Chapters 2 and 6, both public sector organisations and contractors suggested a number of alternative approaches and criteria for assessing applications, though none eliminated imbalances.
[30] Phase 2 is not included in the comparison, as this was an atypically small round of funding, allocated in a short time frame to a limited number of projects.

Figure 1: Breakdown of applications to Phase 1, Phase 3a and Phase 3b by value of funding applied for



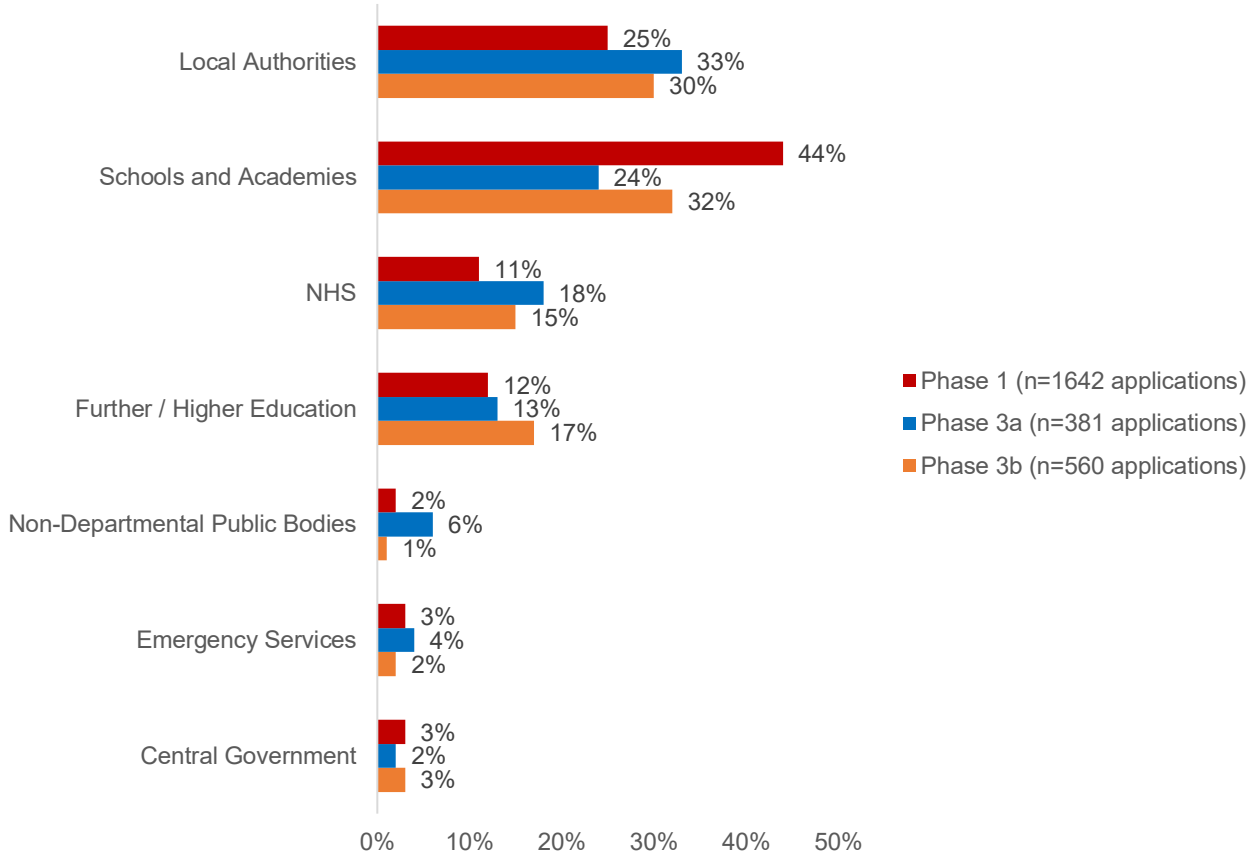
Source: PSDS Phase 1, Phase 3a and Phase 3b application data

Figure 1 shows that despite the increase in expected contributions to projects from applicants in Phase 3, the average value of Phase 3a and 3b grant applications was higher than in Phase 1. Compared to Phase 1, a much lower proportion of Phase 3a and 3b applications were in the lowest (<£1m) band.

As discussed later in the chapter, this reflects the introduction of funding for 'multi-year' projects, as these are, on average, substantially larger. This would also explain why the proportion of very large (>£5m) applications increased between Phases 3a and 3b, as the 15% cap on multi-year allocation in Phase 3a was removed for Phase 3b, which saw a substantial increase in multi-year applications. The change between Phases 1 and 3 may also reflect the greater time organisations had to research and develop larger, more strategic / complex projects that they can then seek funding for, compared to when PSDS first launched[31]. In contrast, Phase 1 was launched and allocated in a relatively constrained timescale, and organisations were perhaps more likely to 'rush in' applications for less considered projects.

[31] Albeit noting respondent feedback that ambition could still be curtailed by the need to deliver within a certain time period.

Figure 2: Breakdown of applications by sector for Phase 1, Phase 3a and Phase 3b



Source: PSDS Phase 1, Phase 3a and Phase 3b application data

Figure 2 shows that across Phases 1, 3a and 3b, the proportions of applications from different sectors have been fairly consistent. The proportion of applications from schools and academies, which had decreased significantly between Phase 1 and Phase 3a, has increased in Phase 3b. Conversely, seemingly linked to the introduction of multi-year funding[32], there was a substantial increase in the proportion of applications from NHS bodies between Phase 1 and Phase 3a; in Phase 3b this proportion has reduced slightly.

Despite this, there continues to be evidence (including eligible non-applicant feedback discussed in sections 2.3 and 2.4) that organisations with more limited resources[33] feel discouraged from applying to the PSDS due to the resources required to formulate eligible projects and complete applications, weighed against the risk of not receiving funding.

In Phase 1, there was a cap on the funding available for multi-year projects (15% of the total funding available). This cap was removed for Phase 3b and applicant appetite for multi-year projects seems to be growing. In Phase 3a, 15% of applications were for multi-year projects; these accounted for 37% of funding applied for[34] and the average value of multi-year

[32] NHS organisations accounted for 30% of multi-year funding applications in Phase 3a.
[33] Generally smaller organisations – such as schools - that would tend to be proposing smaller projects.
[34] Albeit some of this funding will be drawn from 2023/24 and 2024/25 budgets.

applications was £5.51m. In contrast, whilst the average size of multi-year applications in Phase 3b was similar (£5.08m), the proportion of Phase 3b applications seeking multi-year funding more than doubled from Phase 3a (to 34%), and these accounted for approximately two thirds (67%) of funding applied for.

Applications to the single year allocation averaged £1.31m, lower than (albeit a similar order of magnitude to) the £1.42m and £1.68m averages in Phases 1 and 3a respectively.

2.2: Scheme launch and promotion

Phases 3a and 3b of the PSDS were promoted directly by Salix Finance; formally (via webinars, social media and on the website), and informally (for example, Salix representatives notifying organisations they were already in contact with). The scheme was also promoted by Central Government departments and bodies, and through more regional and sector-specific organisations / membership bodies (such as Net Zero Hubs) that Salix liaised with. Communications were also put out by teams within the Department, including in sector publications and through social media.

Interviewees across respondent groups report a high level of awareness of PSDS amongst its public sector audience; many organisations are signed up to Salix updates and watching out for announcements on the next round of funding.

> *"The schemes themselves don't necessarily need much marketing because they're so widely known and so popular." [Salix representative]*

One Salix representative did highlight the importance of ensuring awareness of PSDS amongst specific roles in public sector organisations. These vary across sectors[35], but in Phase 3 in particular, strategies and channels to promote the scheme have been targeted towards engaging those in public sector organisations (e.g. finance directors) who may be less aware of the scheme, but critical to progression of applications.

Most applicants agreed that the promotional activity for Phase 3a and 3b had been effective. Based upon first-hand observation and attendance at launch webinars, Department representatives praised the PSDS promotion and guidance provided by Salix, and their relationship with, and knowledge of, the public sector.

The only slight issue was a perceived tendency for Salix to defer certain technical questions (e.g. on the interpretation of specific scheme rules) to the Department in webinars, though one representative acknowledged that there can be some ambiguity at the outset of certain phases.

The scheme is also increasingly being promoted by participants themselves. Over half (55%) of respondents to the Phase 3a single year participant survey said that they had actively promoted their funded project(s); around a fifth (18%) reported that they had been approached

[35] Generally senior management, finance departments, and facilities management, as well as sector-specific stakeholders e.g. in local authorities it is perceived to be critical to have cabinet members aware and supportive.

by other public sector organisations to discuss their project(s). Although these respondents were not able to say what effect these conversations had on appetite to apply, they had generally[36] been positive about the scheme and its value:

> *"We spoke to another county council about the merits of the PSDS scheme. They visited us and we are now in touch by email." [Phase 3a grant recipient]*
>
> *"We did feature in local press and did case studies for Salix …and spoke at two community engagement events in the local area." [Phase 3a grant recipient]*
>
> *"Another police force and a local authority are coming to visit…People have been asking about logistics, the bidding process, picking contractors, installing in a working building." [Phase 3a grant recipient]*

Ultimately, with Phase 3a and 3b over-subscribed, it can be concluded that promotion is continuing to be sufficient to achieve the intended level of interest and applications. Department representatives particularly praised Salix's relationship with the public sector and their ability to consistently attract large numbers of applications to the scheme across Phases. Based upon the profile of applicant organisations, it is clear that all eligible sectors are being reached, though it is more challenging to assess the representation of certain sectors[37].

2.3: Decisions to apply

Applicants' main motivation for applying to PSDS was that it provided the only substantial[38] funding stream to help their organisation meet its decarbonisation aspirations. As will be explored in Chapter 5, most could not afford to fund equivalent activity from internal budgets. PSDS was felt to be particularly attractive as it is grant funding, albeit requiring a contribution from applicant organisations.

Several project leads in applicant organisations reported an expectation / pressure from senior colleagues that the organisation should be accessing funding opportunities like PSDS.

As noted in Section 2.2, lack of awareness of the PSDS is not considered to be a widespread barrier to applying. All but one of the eligible non-applicants interviewed with respect to Phase 3a had heard of PSDS[39], knew they were theoretically eligible, and most stated their intention of applying for future rounds of PSDS[40]. Some had not wanted to rush in an application to PSDS, instead taking the time to fully formulate a deliverable project / complete their HDPs.

[36] There was inevitably, and usefully, some discussion of the challenges encountered in the process of formulating and delivering projects through the scheme.
[37] For example, where schools are included within local authority applications, so don't appear as discrete applicants.
[38] Some respondents acknowledged sector-specific funding for certain building improvement works but felt there was no equivalent to PSDS in terms of the scale of funding and focus on decarbonisation measures.
[39] Although those unaware of PSDS may have been less likely to respond to interview recruitment approaches.
[40] Several had applied to Phase 3b.

However, both applicants and non-applicants to Phases 3a and 3b have cited issues and reservations around challenging application requirements (discussed further in section 2.6), the commensurately substantial internal resource required, and uncertainty of awards. These, rather than particular rules, were the principal issue cited, though rules / eligibility criteria underpin many of the data requirements in the application. For some, uncertainty about whether they would actually obtain any funding was exacerbated by the 'first come, first served' approach to allocating funding; this is explored further in Section 2.8. One respondent suggested that – at the outset of each Phase – there could be bespoke briefing and support from Salix for organisations that have never previously applied.

2.4: Views on scheme rules

Understanding stakeholder views on, and responses to, changes in PSDS rules is a key objective of the evaluation. Interviews and workshops have explored with several respondent groups the various rule changes introduced since Phase 1.

One Salix representative highlighted the wide range – and sometimes potentially contradictory - priorities, and therefore scheme rules, that PSDS has to be delivered within.

> *"We're tied to decarbonisation. We're trying to support energy security. We're trying to support levelling up. We're trying to address sector imbalances. They all have competing requirements." [Salix representative]*

2.4.1: Emphasis on heat decarbonisation

From Phase 2, PSDS rules have encouraged applicants to focus on heat decarbonisation, with a requirement to include a low carbon heating measure in each building included in the project.

Phase 3a and 3b applicants understood the rationale for this rule from the point of view of achieving net zero. Equally, respondents acknowledged that large heating system changes are amongst the most challenging to build a business case for, and so amongst the measures most in need of external funding. However, across both applicant and contractor respondents, there were a number of reservations about the emphasis on low carbon heating:

- Several pointed out that it is challenging for smaller buildings (with lower gas consumption) to be included in projects, as the required CCT is more difficult to achieve.
- In terms of financial benefits to public sector organisations, several respondents emphasised that measures to reduce consumption are a priority, and that despite some building fabric measures (and solar PV) being cost effective, not all organisations can afford the up-front equipment and installation costs. The focus on heat decarbonisation may discourage applications from some organisations due to the lack of apparent savings.

  > *"Most of the decarbonisation projects aren't really a money saver. They're just a carbon saver, which is still good, but maybe less of a priority for some..." [Salix representative]*

- A small number of respondents felt that measures such as air source heat pumps are adding significant (potentially unaffordable) electricity costs to organisations.
- Even with the Phase 3 emphasis on 'fabric first', a number of respondents (both applicants and contractors) have expressed concerns about heat pumps being oversized.
- Several applicants and contractors noted that heat pumps necessitate substantial, costly and time-consuming capacity upgrades.
- TPTA (third party technical assessor) views on the merits of excluding hybrid heating systems were mixed. Whilst some welcomed this change, feeling that it should lead greater CO_2 reduction (whilst also making applications easier to assess), others claimed that hybrid systems 'typically' provide the best value for money, whilst offering increased resilience and reassurance to building operators.

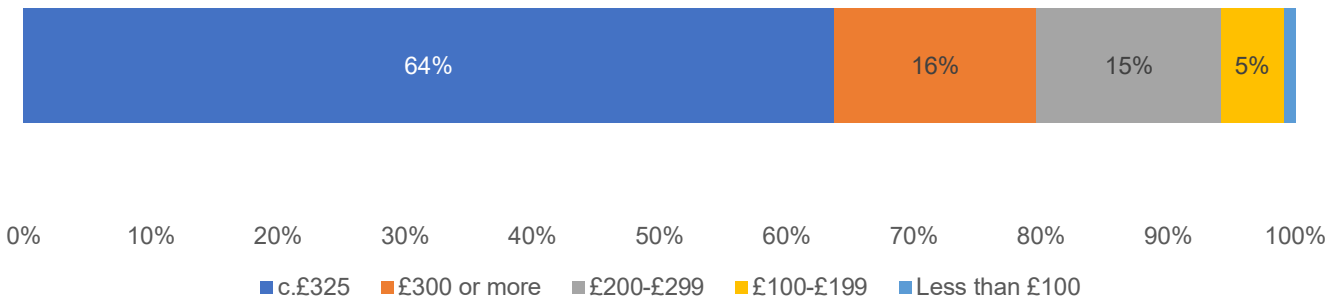
2.4.2: Carbon Cost Threshold (CCT)

This policy stipulates that projects cannot go above a fixed threshold of grant £s requested per tonne of carbon saved over the lifetime of the measures installed. To better ensure policy cost effectiveness, this threshold was changed from £500/t (based on both direct and indirect carbon savings) in Phase 1 to £325/t (based on direct carbon savings only) in Phase 2 and has remained at this level since.

Most Phase 3a and 3b applicant respondents understood the rationale for the CCT, especially as a means of managing scheme value for money (in terms of carbon savings delivered per £ spent). However, as described in Section 2.5, the lower threshold has had significant effects on the measures and buildings applicants include in applications; these have sometimes not aligned to maximising decarbonisation. For example, applicants have selected ASHPs over GSHPs, as the former are significantly less expensive to purchase (and less complex / costly to install) despite the indirect carbon emissions savings being lower. Several Phase 3a grant recipients reported having decided not to apply to Phase 3b because they could not formulate a viable project. Whilst these respondents are therefore viewing the CCT somewhat negatively, it should be noted that this finding could equally be seen as evidence that the CCT is working as intended.

The following chart provides a breakdown of how close Phase 3b applications were to the £325/tCO2 threshold; the majority of applications went right up to the threshold.

Figure 3: Proximity of Phase 3b applications to the £325/tCO2 CCT [n=560]



Source: PSDS Phase 3b application data

2.4.3: Contributing 'like-for-like' costs

From Phase 3a, to maximise the additionality and cost effectiveness of PSDS, participants have been required to contribute to the project at least the cost that would have been incurred by replacing their heating system with a 'like-for-like' system (for example, replacing old gas boilers with new gas boilers).

All applicants saw the rationale for this and most agreed with it. It was noted in the grant recipient workshops that the 'like-for-like' cost tended to comprise a small proportion of the overall project cost anyway, so was not of concern for the financial viability of the project.

A reservation voiced by several applicants was less around the required contribution, more the stipulation that applications could only propose to replace 'end-of-life' heating. Several applicants had mistakenly understood that in sites with multiple boilers of different ages, the rules would prevent the system from being replaced or preclude certain buildings from improvement[41].

Analysis of Phase 3a and 3b applications shows that for the majority, PSDS was still covering most of the *originally anticipated* project costs. The caveat is that, as described in Chapter 3, for many projects the actual costs increased substantially post-award.

2.4.4: Removal of the per organisation funding cap

The £5m per project cap was only introduced in Phase 2, specifically to prevent the much more limited budget being allocated to a small number of very large applications. All Phase 3 respondents who participated in this research, across stakeholder groups, were relaxed about its removal. Most applications for Phase 3a and 3b have been for projects well under £5m, meaning the cap would not have affected them anyway.

[41] Salix confirmed that such situations will be considered on a case-by-case basis. Where one unit is causing the whole system to fail, or causing significant issues and high maintenance costs, Salix may agree to cover the full costs of a whole system replacement.

2.4.5: Provision of funding for multi-year projects

In Phase 3a and 3b, organisations had the option to apply for funding to deliver projects across multiple years[42]. This longer timetable for delivery is intended to enable larger, more complex projects, as well as providing organisations with more time to prepare before commencing implementation on site. This seems to be having the intended effect, with Phase 3b multi-year project applications averaging c.£5.1m, compared to c.£1.3m for single year applications.

Phase 3b multi-year project application figures presented in section 2.1 demonstrate a substantial appetite for multi-year funding.

All Phase 3a and Phase 3b grant recipients, whether single or multi-year, thought that provision for multi-year projects was a good idea. As did contractors and TPTAs interviewed across Stage 1 of the evaluation. Several grant recipients described challenging experiences in trying to design, procure and deliver substantial works in a twelve-month period, as well as securing planning permission and commitments from the DNO to carry out connections / capacity upgrade works. They welcomed the opportunity for a more considered approach, which they felt may reduce project costs[43] and pressures.

Several Phase 3a single year grant recipients had received funding in Phase 3b for multi-year projects and said that this had enabled them to include more buildings and measures in their project[44]. It was felt to be particularly useful where organisations' activity windows are constrained by on-site use, and the need to work around their core service provision. For example, schools particularly welcomed the introduction of multi-year timescales, only being able to do substantial works in school holiday periods. Along similar lines, a Salix representative noted that multi-year funding provision mitigates potential issues with trying to undertake installations in winter to meet deadlines.

In case study interviews, multi-year grant recipients unanimously stated that their project would not have been feasible to deliver in a single year; the multi-year option was critical for enabling their larger / more complex project to be delivered.

> *"For larger projects the [multi-year option] helps…It's not just programme delivery, there are various governance barriers that we need to get through before projects can proceed, which take time." [Phase 3a survey respondent - HE]*

PSDS contractor workshop attendees agreed that longer lead-in times for projects (as well as more flexibility) would be helpful in enabling more time to identify potential problems and / or deal with unforeseen problems, resulting in better value for money as well as improved quality. One contractor workshop attendee gave an example of having to make more expensive choices on heat pump placement because scheme timescales would not allow for removal of

[42] In Phase 1, deadline extensions meant that some projects were ultimately effectively funded across multiple years, though this was not the expectation at the point of project design and application.
[43] This links to the argument made by various respondents (i.e. varied respondent groups and sectors) across Phases 1-3 that the time-limited spike in work also leads to substantial cost inflation and limited supply.
[44] In Phase 3b, 33 organisations were awarded funding for planning year projects; 10 of this group had successfully applied for funding in Phase 3a. In addition, 60 organisations were awarded funding for multi-year projects in Phase 3b; 14 of this group had successfully applied for funding in Phase 3a.

obstructive piping. Echoing the views of grant recipients and contractors in previous waves, another noted that it can be more challenging – and costly – to procure heat pumps within a very defined timescale.

TPTAs were also very supportive of the introduction of multi-year project funding, on the basis that it would lead to better planned and higher quality projects, so reducing the risk of non-delivery / abandonment due to delays. They suggested with respect to Phase 3a that multi-year funding should become the norm; multi-year projects already account for the majority (59%) of the Phase 3b grant allocation.

2.4.6: Provision of funding for 'planning year' projects

Introduced in Phase 3b, applicants could apply to effectively reserve funding for projects that may not be ready to commence works on site in the first funding year for Phase 3b (2023/24). This allows them to use this first financial year to plan their project without claiming any grant funding to better ensure successful implementation.

The interviews and workshop with Phase 3b grant recipients found some lack of awareness of the planning year option, though when explored with respondents, all welcomed the concept:

> *"If we'd been aware of that route, we would have gone down it." [Phase 3b grant recipient – Academy Trust]*

Grant recipients acknowledged that the option allows for what are often lengthy decision making and procurement processes at the outset of projects. One Salix representative reported that they had difficulty persuading some applicants to delay funding / implementation and have a non-funded planning year[45], but that the value of this to project feasibility and delivery was ultimately understood by applicants.

In Phase 3b, 32 applicants (45 projects) applied for planning year funding, across a range of sectors. These projects were not necessarily larger or more complex than single year applications; the average planning year grant request was £1.1m, with none exceeding £5m.

Applicant and contractor support for both planning year and multi-year funding aligns with the ongoing criticism from many of the single year project delivery deadline. As reported in previous evaluation outputs related to Phase 1 and Phase 3a, the single year project deadline for project delivery is felt to cause significant stress for project teams and exacerbate project delivery challenges. For example, it creates short term spikes in demand which can lead to supply chain shortages (both for equipment and contractors), or it may necessitate change requests that then take up time and resources to formulate and agree.

> *"Working within one financial year is very challenging considering the supply chain pressures currently impacting delivery of materials etc." [Phase 3a grant recipient]*

There was reticence in applying for multi-year funding in Phase 3a as funding for multi-year projects was capped at 15% of the Phase 3a funding allocation. However, with both multi-year

[45] Due to organisation uncertainties about being able to commit funding from capital budgets in future years.

and planning year funding available without caps in Phase 3b, there is a question of why organisations that felt they would benefit from longer timescales chose to apply for single year project funding. Widespread lack of awareness of multi-year funding options seems unlikely, although several Phase 3b grant recipients who attended the workshop were not aware of either the soft sector caps or planning year funding option. Beyond this, opting for single year project funding might link to organisation's general motivations for applying to PSDS i.e. they need to replace heating systems and decarbonise as soon as possible and PSDS is the main (sometimes the only) viable route for them to fund this.

There is a possibility – acknowledged by several grant recipient respondents – that organisations' appetite for risk and concern about meeting delivery deadlines links to their prior experience of PSDS. Those that have never applied may view the single year project deadline with greater trepidation and be discouraged from applying. This will be explored further in the next stage of the evaluation.

2.4.7: Soft sector caps

'Soft sector caps' were introduced in Phase 3b to support the allocation of funding across the public sector in line with the distribution of carbon emissions. Soft sector caps were put in place across three areas of the public sector: health, education, and all remaining sectors including local authorities. An upper limit to all soft sector caps was set at 35% of the total Phase 3b budget, and no sector's soft cap could be lower than 30% of total Phase 3b funding. These sector caps are 'soft', meaning that if insufficient eligible and complete applications within a particular sector result in that soft sector cap not being filled, any unallocated funding from within that sector soft cap can be allocated to other sectors – even if by doing so, those other sectors then exceed their sector soft caps.

As with the introduction of planning years, interviews with applicants found some lack of awareness of this new policy, though when the concept was explained, respondents were in almost unanimous favour.

Salix representatives reported that the policy had broadened the distribution of funding across different public sector organisations, a view borne out by the analysis of awards presented later in this chapter.

However, as well as noting the added complexity that the soft sector caps policy (coupled with multi-year allocations) brings to grant allocation, several Salix representatives perceived a tension between soft sector caps and delivering on other core priorities, such as reducing carbon emissions cost effectively. In addition, it was felt that within each sector, there remains a bias towards larger organisations, and / or those with more decarbonisation knowledge and experience, accessing funding.

2.5: Project design

Applicant and contractor respondents were asked to explain how they had formulated their Phase 3a and 3b projects, in terms of both measures and buildings included in them.

Some formulated projects from scratch or, as explored in Section 2.5.3, utilised project ideas in their HDPs. Where respondents had applied unsuccessfully in Phases 1 or 2, many said that they largely re-submitted applications for these projects[46], albeit reviewing (and slightly refining) them where they did not meet the updated eligibility criteria.

Regardless of how well the project was formulated at the time the Phase was launched, almost all applicant interviewees reported utilising consultants to conduct site and building surveys, collate and analyse required application data, and in some cases complete application forms.

2.5.1: Measure selection

For context, the following table shows the number of Phase 3a and Phase 3b funded projects that included different types of measure; comparison to Phase 1 is also provided:

Table 3: Measures most commonly included in Phases 1, 3a and 3b funded projects

	Phase 1 (n=461 awards)		**Phase 3a (n=231 awards)**		**Phase 3b (n=231 awards)**	
1	LED lighting	286	ASHPs	206	ASHPs	215
2	ASHPs	282	Building fabric insulation	144	Building fabric insulation	203
3	Solar PV	240	Solar PV	113	Solar PV	103
4	BEMS	220	BEMS	79	Glazing	89
5	Building fabric insulation	201	LED lighting	79	LED lighting	82

Comparison of Phases shows that whilst many of the same measures are amongst the most common in both phases, the focus on heat decarbonisation from Phase 2 onwards has led to the prioritisation of low carbon heating measures, in particular ASHPs[47]. However, reflecting the encouragement of a 'whole building approach', a number of building fabric and energy efficiency measures were common across Phase 3a and 3b funded projects.

As described in Section 2.4, scheme policy played a large part in dictating which measures Phase 3a and 3b applications would focus upon. When choosing heating systems, a combination of the CCT, a desire to keep overall costs down, and (for many) the need to deliver a project in twelve months meant that almost all applicants chose ASHPs rather than

[46] They were fairly confident that these projects had been unsuccessful due to the timing of submission as opposed to failing to meet the scheme criteria.
[47] A number of respondents said that in the absence of the scheme emphasis on heating systems, they would likely have prioritised solar PV, building fabric and battery storage for inclusion in funding applications.

GSHPs[48] as a heating solution[49]. This was also due to the fact that for some buildings and sites, it would have been logistically challenging or impossible to install a GSHP system.

> *"We were keen to consider ground source heat pumps but were concerned about the timing to get it in by March, so we decided we would go for ASHP." (Phase 3b grant recipient - Emergency Services)*

The practicality of installing measures, and in some cases a measure's suitability for a particular site or building, was also another consideration. Linked to this, where applicants already had experience of installing a particular measure – and particularly if installation was straightforward – they might be inclined to opt for a similar project for other buildings:

> *"We wanted to go for ASHP if we could as we had a positive experience with the Phase 2 project and believed it was the right way to go." [Phase 3b grant recipient – HE]*

One LCSF consultant noted that as far as possible, their public sector client wanted to implement a uniform heat decarbonisation solution across their portfolio, to minimise future costs and expertise required to operate and maintain technologies.

A large number of applicants to Phase 3a and Phase 3b included solar PV in their applications alongside heat pumps to offset the additional electricity costs that the latter would bring.

Measure selection also took into account the limitations of the buildings to be improved. For example, one applicant opted for an air-to-air Variable Refrigerant Volume system because replacing the old pipework in the building to enable heat pumps would have been too costly.

2.5.2: Building selection

Scheme policy was the main influence as to which buildings were selected by applicants for inclusion in the project. Applicants made sure to select buildings with eligible 'end-of-life' heating systems, based upon organisational maintenance records. Beyond this, Phase 3a and Phase 3b applicants discussed a number of other considerations:

- Maximising carbon impact (leading to a more favourable t/CO_2 calculation), including consideration of the building's existing quality and type of heating system, heat loss and energy demand. Linked to this, addressing buildings with the biggest energy demands in the organisation's portfolio to better deliver net zero and / or cost reductions (for example, a number of local authorities included leisure centres).
- Minimising occupant disruption and disruption to service provision; several Phase 3 applicants (especially NHS bodies) chose buildings that would have the least impact on occupants. Linked to this, a number of respondents mentioned including buildings that were planned to have, or required, extensive refurbishment anyway, minimising the disruption

[48] A small number of applicants chose GSHP as this was found, following studies, to be the more impactful solution. One respondent opted for GSHP as they understood this had a better prospect of getting planning permission (vs. ASHP, which they understood to have more of a detrimental visual impact on the building).
[49] Especially due to the need for borehole drilling, GSHP is perceived by many as expensive, disruptive and time consuming; essentially much higher risk, especially in the context of a time (and funding) limited PSDS project.

caused by the PSDS-funded works. This consideration was especially important where the building was deemed crucial to the organisation's operations.

- Conversely, some Phase 3a and Phase 3b applicants opted for buildings that are already insulated / have good building fabric. Two main reasons were given: 1) improved eligibility for PSDS funding; if buildings are not 'building fabric ready' for heat decarbonisation, then the investment required to upgrade the building fabric can be a barrier. 2) Buildings with pre-existing good levels of insulation were deemed better suited for heat pump installation i.e. in terms of maximising the efficiency and effectiveness of the heat pumps.
- Minimising delivery risks / complexity; several Phase 3 applicants talked about selecting buildings understood not to have too many delivery challenges or challenges around planning permissions i.e. complicated heritage buildings.
- In line with PSDS application form requirements, multiple Phase 3 applicants said they had opted (for time / convenience) to include buildings for which they already had the requisite information (such as boiler age, and up to date quotes on the cost of replacement).
- Ownership certainty; several Phase 3 applicants, especially in local authorities, said that they understandably prioritised buildings that their organisation expected to continue to own and operate in the medium to long term.
- Maximising wider benefits; several Phase 3a and Phase 3b applicants said that they selected buildings based upon the number of occupants / users that would benefit from improvements e.g. to comfort. One NHS applicant reported that their primary motivation for the project was to improve patient experience through better temperature control.
- Enabling the inclusion of – and maximising the impacts of – certain measures (for example, buildings with roofs that would maximise solar PV energy generation).

The information to inform decisions against these criteria was often obtained from LCSF funded studies.

2.5.3: Use of LCSF and Heat Decarbonisation Plans (HDPs)

The principal focus of LCSF funding, especially from Phase 2 onward, was to support the production of HDPs. LCSF consultants supporting Phases 2 and 3 report provision of a wide range of skills to develop HDPs, including fabric condition surveys, asbestos surveys, lighting surveys, heat loss modelling, costings, options development, and even hydrogeological surveys to assess the potential for heat pumps. Interviewees reported that whilst public sector clients often had very experienced facilities management teams, they generally lacked knowledge of how to identify and assess the relative merits of different types of low carbon technologies for their sites.

> *"Some have very experienced facilities management teams, but they are experts in maintaining that building, not… how a particular low carbon technology would affect the rest of the system, building fabric and comfort levels." [LCSF Consultant]*

Phases 2 and 3 of the LCSF were scheduled such that public sector beneficiaries of the funding had time to generate insights and develop project ideas in advance of, respectively, the Phase 3a and 3b application windows opening.

Most LCSF grant recipients interviewed across stage 1 of the evaluation (n=36) reported that the LCSF work funded by Phases 2 or 3 informed a subsequent PSDS application. Most acknowledged that they would not have designed the same PSDS project (and may not have applied at all) without having first conducted the LCSF funded work. Half of PSDS Phase 3a telephone survey respondents that had received LCSF funding (n=8) said that they would not have chosen to progress their Phase 3a project in the absence of LCSF. Some misunderstood that an HDP was a prerequisite of applying for PSDS funding. All Phase 2 and Phase 3 LCSF consultants interviewed stated that their clients would not have been able to progress the same decarbonisation activity without their LCSF-funded work:

> *"I think this particular client would still continue…replacing light fittings for example…But when it comes to heat decarbonisation, I don't think they would be as advanced as they are now at all." [LCSF Contractor]*

> *"I think the plan sets out a roadmap about what we need to do to achieve decarbonisation. Without it, we would not have been clear what we needed to do." [Phase 3a survey respondent]*

Even if able to apply, several LCSF recipients felt that their successful Phase 3a and Phase 3b PSDS application would not have been awarded funding without the information provided by the LCSF-funded work. Several respondents said that their PSDS applications were built on HDP directions on buildings and measures.

> *"The questions that are now being asked in the PSDS applications are quite detailed; it really does make sense to do the design first." [LCSF Contractor]*

Where projects are awarded funding, LCSF Phase 2 and Phase 3 consultants emphasised the importance of detailed design work in reducing risk of challenges and failure in project delivery.

Recipients of Phase 2 and Phase 3 LCSF, and contractors for the same phases, describe the importance of HDPs in exploring the feasibility, costing and potential savings (energy, carbon and monetary) for different decarbonisation options. This provides both information for immediate PSDS applications, but also understanding of likely costs and opportunities to inform longer term planning. LCSF recipients commented positively on the flexibility of the scheme in enabling them to focus funding to meet their specific needs e.g. fabric condition surveys, heat loss modelling, expert planning and heritage input, costings and project execution plans to create HDPs.

> *"The HDPs give a clear breakdown of site condition and the opportunities for different measures – heating solutions, solar PV etc. That gives us the order of work for maximum decarbonisation [and] return sites would deliver for the money spent." [Phase 3b grant recipient – local authority]*

As robust studies, HDPs are also credited with securing senior management buy-in in public sector organisations to support and finance decarbonisation projects, especially where these might not be ostensibly the quickest or easiest option. One LCSF consultant gave an example of an HDP which completely changed the decarbonisation strategy of a client from heat pumps to an ambient loop heat network.

Where funding did not cover production of detailed plans across their portfolio, LCSF recipients have prioritised these on the basis of similar criteria to building selection for PSDS projects i.e. focusing on buildings with 'end-of-life' heating systems and / or those they are confident of owning in 10+ years' time, and including a range of building types across their estate to provide an indication of what the works would involve for other similar buildings.

Whilst often a catalyst for identifying and progressing decarbonisation projects, several public sector organisations in receipt of LCSF phase 2 or LCSF phase 3 funding highlighted that their HDP had helped to inject some realism into organisational plans and aspirations. For example, it emphasised the need for initial energy efficiency measures before embarking on heating measures or provided greater clarity on the scale of costs and resources required for certain decarbonisation activity. LCSF-funded work helped several organisations investigate and eliminate particular (unfeasible) project ideas, saving time and cost in the long run.

Wave 2 of the evaluation explored the importance of LCSF-funded work through interviewing a sample of organisations that had applied to Phase 3 of the LCSF but were not awarded funding. All ten of those interviewed had applied for Phase 3 of the LCSF with the intention of informing a subsequent PSDS application. Following their unsuccessful application:

- Half have been unable to progress the intended studies; in two cases applicants had to undertake emergency replacement of gas boilers with (new) like-for-like boilers.
- Half are progressing some of the work applied for through LCSF, albeit more slowly and / or on a smaller scale e.g. exploring measure options broadly but without detailed site studies, or prioritising studies for certain sites / buildings.

  "We can't hit it all at once, so we're doing it one plan at a time; get it resolved for one building, get a good solid feasibility study done on how we would fit a heat pump in this building, and get the box ticked ready for a forthcoming PSDS application…" [Unsuccessful LCSF applicant]

Several Phase 3 LCSF consultants were aware of public sector organisations, across various sectors, funding HDPs without an LCSF grant.

One unsuccessful LCSF applicant suggested that those not awarded LCSF funding could be signposted to more general, perhaps uncosted, sources of guidance on how to progress HDPs / studies necessary to support decarbonisation. Linked to this, several respondents suggested that more information from successful LCSF projects could be shared to provide some guidance for those not funded.

However, applicants and contractors were not unanimous as to the value of all LCSF-funded work; some public sector organisations and consultants raised concerns about the quality of HDPs[50]. Several felt that with consultants aware of the short-term requirement for HDPs in the public sector, and that particularly for less experienced or less knowledgeable clients, this was leading to a very variable market in terms of quality and HDP usability. Several interviewees stated that costings within HDPs were done on a very different basis by different organisations, depending on their project experience, skills and the depth of design work done within the HDP and there was a risk of significant cost estimate discrepancies between different HDPs[51]. One LCSF Phase 3 consultant reported that they had to revisit "fundamentally wrong" recommendations produced by previous contractors e.g. suggestions of GSHPs in a city site with no space.

Several LCSF Phase 2 and Phase 3 grant recipients pointed out that LCSF-funded work that they assumed to be sufficient for PSDS applications did not provide certain (unanticipated) information requirements in subsequent PSDS phases e.g. detailed building layouts. TPTA workshop attendees with respect to PSDS Phase 3a raised concerns about the poor quality of some HDPs, and regardless of quality felt that HDPs generally needed to be more tailored to the information required for PSDS applications.

One LCSF Phase 3 consultant suggested that the Department or Salix could benchmark HDPs so that the expected level of detail and cost for typical types of HDP (i.e. for different organisations and buildings) could be established. This could then reduce the divergence in cost and achieve a good balance of engineering detail and actionable value. Along similar lines, another consultant suggested adopting 'bronze', 'silver' and 'gold' standards within HDP guidance to reflect the variation in the depth of analysis and cost[52]. This would allow clients to understand what they were getting and for Salix to compare scope and costs.

On the other hand, one LCSF consultant expressed concerns about Salix / the Department being too prescriptive as to the optimal HDP. They reported experiences of clients unwilling to deviate from a previous / preset HDP template, even where this, according to the consultant, constrained potential improvements to the existing plans.

> *"I've seen clients that want a replica of what another consultant has produced two years ago [on which] I don't necessarily agree with all of the points. I could see areas that I could have done differently or better, but the client was worried about [the detrimental effects of taking a different approach]." [LCSF Consultant]*

LCSF applicant and LCSF consultant views on the LCSF application process for Phases 2 and 3 were similar to those for all Phases of PSDS and LCSF Phase 1. Most felt the application

[50] Separate to this evaluation, the Department commissioned a research project to review a large sample of recent LCSF decarbonisation plans, to better understand the variability in quality of HDPs cited by some applicants / contractors. As a measure of HDP quality, this project identified variability in how well useful information could be extracted from HDPs.

[51] It was also noted by grant recipients and contractors that regardless of HDP quality, costings could be problematic, with prices of equipment and installation rising considerably between completion of LCSF-funded studies and commencement of PSDS-funded projects.

[52] For example, a "gold standard" HDP including site visits and detailed analysis might cost four times more than a "bronze standard" one based on questionnaires with no site visits.

form to be appropriate in terms of length and level of information required, though some dissatisfaction was expressed with:

- Lack of clarity on the level of detail required in applications; one applicant suggested word counts could be provided:

  "I've spoken to a couple of consultants who've said that they've had successful bids just based on a couple of sentences, whereas other people say they've written paragraphs, so it is difficult to get a feel for what they're looking for." [Unsuccessful LCSF applicant]

- Lack of feedback on unsuccessful applications, with applicants not knowing whether their application was worthy of funding (but missed out due to timing), or whether to make adjustments before re-submitting in a future phase. It was also noted that lack of feedback could create internal challenges and stress when trying to explain unsuccessful applications to senior management:

  "[The unsuccessful outcome] didn't impress my Director…I want to be able to reassure them that it wasn't my fault that the application failed." [Unsuccessful LCSF applicant]

  "Maybe I think [the application requirements] were really straightforward, but I might have completely missed something really important." [Unsuccessful LCSF applicant]

The most common criticism was of the 'first come, first served' allocation of LCSF funding, with application windows closing in a very short amount of time. Several LCSF applicants and consultants suggested a rolling fund (i.e. enabling organisations to apply for funding at any time from a constantly available fund) would be more appropriate.

"It would be great if it could be a rolling programme of submissions, rather than this fight between 2pm and 2.10pm when the portal opens." [Unsuccessful LCSF applicant]

The only other criticism of LCSF, from one applicant, was that it funds isolated consultant-led studies, rather than building capacity and skills within public sector organisations. Addressing this point, one consultant argued that the technical skills they provide are rarely required (and then only for a short period of time), so public sector organisations would be better off investing in more strategic, more widely applicable skills e.g. project and investment planning.

2.5.4: Considerations of risk: identification and mitigation

All PSDS applicants were required to produce a risk register as part of their Phase 3 applications, and quotes for certain costs included in the application had to be up to date. In Phase 3b, Salix formalised additional 'deliverability' checks on applications[53]. A number of Phase 3b applicants noted that, by requiring certain evidence and information, the application

[53] Comprising rigorous assessment of whether, in the context of the likely risks, the projects can be completed to the claimed timescales and budget.

form effectively highlighted a number of potential risks and forced applicants to outline steps to addressing them.

> *"The application form did require us to think ahead and helped with timetabling." [Phase 3b grant recipient – Central Government]*

Most applicants had considered risks alongside more experienced consultants, who were able to bring experience of previous decarbonisation projects to add to the applicant organisation's general set of risks for construction / refurbishment works. A number of respondents were also able to draw upon their experience of delivering projects in previous Phases. PSDS contractors described working collaboratively with public sector clients on the creation of project risk registers, which were then updated throughout project delivery.

The types of risks envisaged by both single and multi-year applicants, and their contractors, were numerous. These risks, and the approaches project teams took to mitigating them, are set out in the table below. Some risks – or at least consideration of their consequences - related to the operations of the organisations themselves (for example, sites being out of action, buildings not able to be occupied, or heating not working, when needed). Based on interview responses, the table below focuses on recognition of risks to delivery in relation to PSDS timeframes and project costs.

> *"Our risk register…covered everything you could possibly think of. We worked with [the grant recipient] to identify their key risks. Then, based on our experience of similar projects, we added what we considered to be even the lowest level risks, because the timeframe for delivering the project was so short, so any risk of any kind would have impacted on the ability to deliver that project." [PSDS Phase 3b Contractor]*

Table 4: Key project delivery risks envisaged by Phase 3a and Phase 3b applicants, and planned mitigations

Risk to project delivery	Mitigation
Failure to deliver by the required PSDS deadline, potentially leading to loss of grant funding.	This was the ultimate risk arising from a number of more specific ones listed below, and mitigations varied accordingly. As a general approach, several Phase 3a and Phase 3b PSDS applicants highlighted the use of "experienced" consultants in project design and management. One respondent said that they had "front-loaded" all aspects of the project that were funded by the PSDS grant.
Cost inflation (due to wider economic factors and / or availability of products / services).	Engaging contractors early in the process and seeking fixed prices or quotes. In addition, building in some contingency for cost increases and / or additional, unexpected costs.

Risk to project delivery	Mitigation
Lack of supply chain capacity and lack of availability (or at least long lead times) for products.	Starting procurement, particularly securing heat pumps, as early as possible (sometimes at risk before award) and including PSDS project deadlines as stipulations within contracts. One respondent specifically recommended sending 'letters of intent' to preferred contractors / suppliers in anticipation of funding being awarded. One applicant noted that they were less concerned about equipment availability as they were requesting more domestic-scale, 'off the shelf' heat pumps, as opposed to larger, more bespoke models.
Obtaining planning permission, especially for listed buildings and projects with measures creating a level of noise pollution.	Early engagement of, and consultation with, planning departments to understand and take into account the potential issues and planning policies relevant to the sites and / or buildings to be included in applications. One grant recipient extolled the benefits of having established a Planning Performance Agreement for the project in advance of commencing works. This enabled identification, discussion – and ideally resolution, or at least mitigation – of any potential planning-related obstacles.
Unexpected costs arising due to the need for additional connections / capacity upgrades on sites. Linked to this, delays to project completion due to DNO timescales for site visits, assessments and upgrade / connection works.	Phase 3a and 3b application forms specifically asked applicants to provide evidence that they considered the need for capacity upgrades / connections and, if deemed necessary, started engaging their DNO on this[54]. However, this was hard to fully mitigate due to limited time in advance of applications and award, and cases where respondents reported DNOs changing their view on the need for upgrades. One contractor noted that it can be useful to have pre-existing contacts within DNOs to improve the speed of responses to communications.
Site specific risks such as general disruption, maintaining BAU operations, required	Most PSDS contractors involved in delivery of Phase 3a and Phase 3b projects felt that a key aspect of de-risking a project is to carry out as many site-specific surveys as possible up-front – in some cases these had been paid for through LCSF.

[54] Failure to do so was part of the reason for applications being sent back to applicants for review and amendment, and / or being rejected.

Risk to project delivery	Mitigation
ancillary works, asbestos, and site access (especially for hospitals and schools).	This could include asbestos, electrical capacity, acoustics and roof-PV surveys. It was noted that even thorough site surveys may not identify every potential issue (some issues are reported to have preceded any documentation on the building / site) and that some would only be known once on-site works began. Beyond thorough site surveys, Phase 3a and Phase 3b PSDS applicants simply had to build in some contingencies in terms of time / budget in case these issues arose.
COVID; especially for NHS sites.	By the time of Phase 3a, organisations had established procedures for managing this, such as requiring contractors to be vaccinated (unless exempt).

Challenges encountered by projects are described in Chapter 3. To date, 17% of Phase 3a and 10% of Phase 3b grant recipients have subsequently abandoned the project and more projects have been subject to delays and cost inflation. This could be taken as an indication that some Phase 3a and Phase 3b PSDS applicants did not properly assess the type and / or severity of risks to project deliverability.

This in turn may link to the anecdotal evidence, arising from applicant interviews, that organisations are in desperate need of funding for substantial decarbonisation works, and will submit applications even if there is a high degree of (sometimes unspoken) uncertainty that projects are deliverable in the specified time and budget. There may also be a degree of optimism bias from applicants. Whilst a number of applicants and contractors discussed contingencies, equating to up to 10% of quoted costs[55], few Phase 3a and Phase 3b applicants mentioned having planned the project assuming a 'worst case' scenario.

PSDS contractors involved in delivery of Phase 3a and Phase 3b PSDS projects were keen to emphasise the benefits of early (pre-award) procurement and detailed surveys in identifying, and enabling mitigation of, risks. However, they noted that applicant organisations would have to be willing to pay for this at risk (they may not get PSDS funding), and many are unwilling or cannot afford to do so.

In the TPTA workshops, it was felt that many PSDS funded schemes took an insufficiently robust approach to risk management; one criticism was that applications tended to focus on generic, rather than project specific risks. It was suggested by several TPTAs that applicants'

[55] The way in which some contractors discussed contingencies, these did not seem very carefully considered i.e. they were seen as an automatic addition (a 'typical industry standard' of 5 or 10%) as opposed to an amount calculated based on the likely risks involved in this particular project.

approach to risk management could be improved if Salix could develop a risk management template, a checklist of potential risks for applicants to review and reflect on. It was also felt by TPTAs that the grant application stage is generally too early for applicants to have a full understanding of risks around design, procurement and construction. Linked to this, TPTAs felt that applicant pronouncements on expected completion dates were generally optimistic[56].

All that said, across Phases 1-3b, a number of the already recognised challenges have turned out to be more severe than might reasonably have been anticipated. This has especially been the case for inflation (with rising energy and other costs having a knock-on effect on the cost of products and services across the supply chain).

There were mixed views about the effect of HDPs in reducing risk in PSDS projects. Some Phase 2 and Phase 3 LCSF consultants believed that HDPs reduced risk because they provided clients with sufficient information to make better informed decisions, such as in relation to technology options. Others thought that the main project risks of implementing a PSDS project remained largely unaddressed by HDPs and required more detailed design work e.g. identifying the need to involve the DNO or securing planning permissions.

2.6: Application form and requirements

All PSDS applicants (including contractors that worked with their clients on project design and application) were asked for their views on the Phase 3a/3b application forms – both the requirements and the submission process.

Overall, applicants had mixed views. On the one hand the Phase 3 application forms were felt to be comprehensive and covering the right areas[57]. Unprompted, multiple applicants welcomed the increased detail and areas covered by the form in both refining project design and filtering out unsuitable projects.

> *"From our experience, Salix ask more pertinent questions than they did in earlier phases of the scheme and their technical assessment is more in depth and robust…There has been more correspondence between us during the evaluation process than there was in Phase 2." [Phase 3b grant recipient]*

Those with experience of previous Phases recognised a number of question areas and had answers or approaches already prepared for some. In addition, the guidance and workshops supporting production of applications were almost unanimously praised. Several Phase 3a and Phase 3b applicants complimented the provision of the application forms and templates in advance of the application window officially opening.

[56] Whilst this was generally attributed to a lack of applicant experience and / or expertise, some TPTAs felt this may, in some cases, be deliberate, in order to present a positive case for grant award. In particular TPTAs felt that application costings were often unrealistic, and that this may often be to make applications look better or fit the CCT.

[57] Though one respondent commented that due to fluctuations in energy prices and contractor costs, providing this data/ quotes is flawed.

Salix representatives emphasised that most of the additional information being sought in the Phase 3a and 3b application form was critical to understanding the scope, key technical elements and deliverability of a project. They felt that the quality of applications had improved markedly from Phase 1 and 2, and that greater consideration of project risks and deliverability would lead to fewer abandonments[58].

However, there was also a common view amongst Phase 3a and Phase 3b PSDS applicants, echoed by Salix representatives summarising feedback they have received, that the application form information requirements were "onerous"[59]. Valuing the increased scrutiny, but criticising the burden of applying, may appear slightly contradictory; however:

- Applicants often felt applying was onerous in the context of the time period that they had to gather the data i.e. the few weeks between the launch of the Phase (and publication of guidance on the requirements) and the application window opening[60]. There was consensus amongst applicants that as much time as possible should be given between the announcement of funding and the opening of the application window, at least whilst the 'first come, first served' allocation approach remains.
- Some applicants felt that the broad areas explored in the application were appropriate, but the level of detail and evidence sought was sometimes challenging. For example, especially for larger projects comprising multiple sites, collating the required data for each site and building was burdensome. Some applicants said that for whatever reason, their organisation simply did not have some of the documentation or evidence (e.g. schematics) requested by the application form; others stated that these documents could be obtained but, especially in the context of a small organisation with limited or no specialist resources for this administrative work, finding them in the time allowed was challenging.

  "I thought it was very time consuming to get all of the component parts into a satisfactory level of detail. I'm not commenting on whether this is right or wrong, but we all commented we've never seen such a complicated process…I understand the need for it. But it's a lot of time to commit for money that isn't guaranteed. I think if we hadn't been successful we may not have applied again. I know of other authorities that aren't applying again for this reason." [Phase 3b grant recipient – local authority]

Almost all Phase 3a and Phase 3b PSDS applicants were being supported to some extent by consultants, and many commented that it would have been very challenging, or even impossible, to participate without their support. Linked to this, several pointed out that the complexity of the application requirements almost necessitated organisations investing in external support. There was concern from some applicants, and one Salix representative, that the complexity of application requirements excluded those without the resources to appoint a supporting consultant. The budget for this can be hard for some organisations to find,

[58] In actual fact, a higher proportion of Phase 3 funded projects have abandoned than in Phase 1, though this may be linked to the more severe cost inflation pressures concurrent with Phase 3a and 3b delivery, coupled with a less challenging CCT in Phase 1. In addition, projects were generally more straightforward in Phase 1 (i.e. more straightforward energy efficiency measures).
[59] Three of the 10 eligible non-applicants said that perceptions of an onerous application (coupled with the uncertainty of being successful) was a key reason they had never applied.
[60] Phase 3a scheme guidance was published on 8 September 2021, with the application form becoming available on 15 September and the application portal opening on 6 October. This closed on 3 November.

especially if there is a risk of not then receiving funding. Linked to this, one grant recipient queried whether there could be a more straightforward application form for small, simpler projects, though they did not elaborate on a suitable threshold for this.

TPTA workshop attendees discussing Phase 3a tended to feel that the greater detail required in Phase 3a applications had raised the overall quality of applications, but equally that many mistakes were being made, requiring lots of follow up work to address errors and omissions. Some associated these issues with the approach to awarding funding (discussed later in this chapter), which was felt to encourage applicants to prioritise promptness of submission over quality.

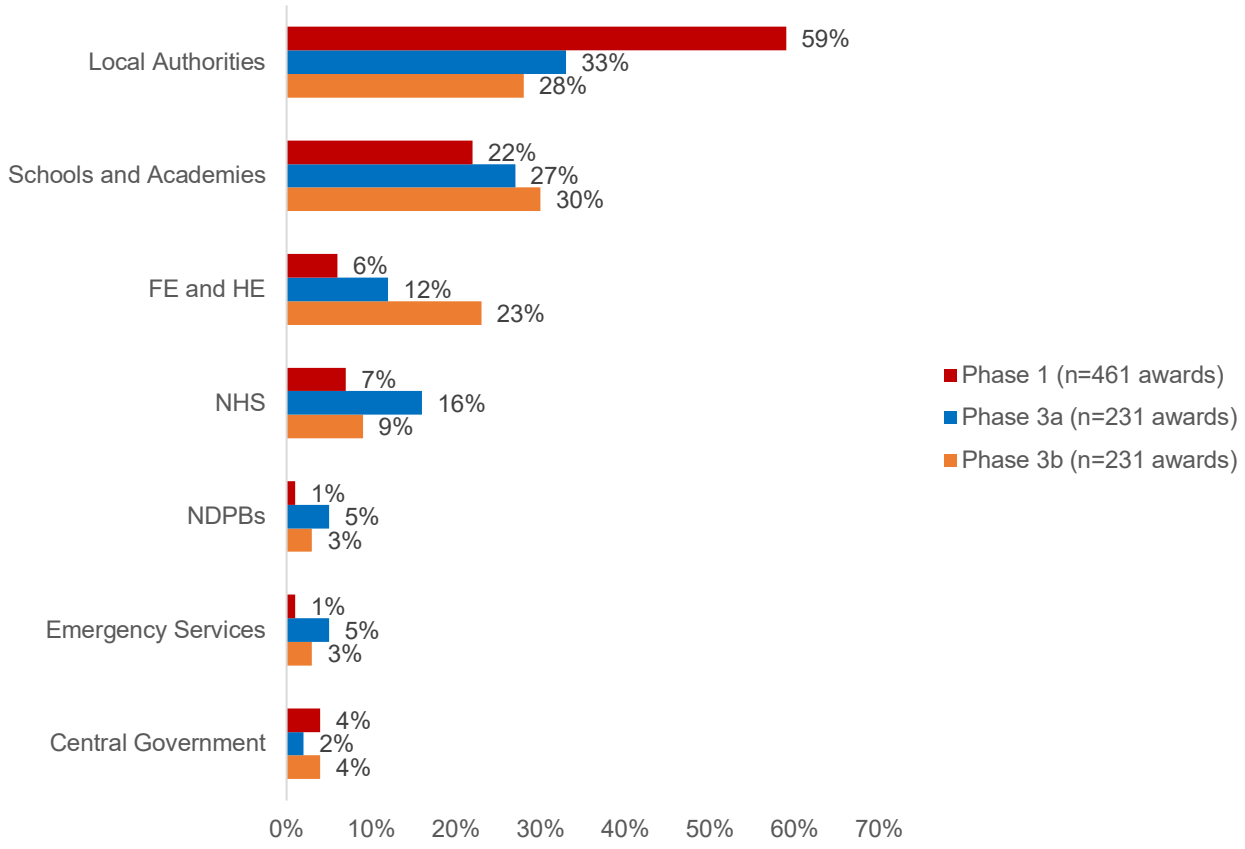
Regarding submission of Phase 3a and 3b applications through the portal, most applicants either could not recall specifics, or said this was fine and had no further comment

2.7: Phase 3a and 3b awards

The following section sets out both the profile of funded projects and stakeholder views on the way in which applications were assessed and awarded funding. In Phase 3b, 231 applications were awarded funding:

Figure 5: Breakdown of Phase 1, Phase 3a and Phase 3b awards

Figure 4: Breakdown of Phase 1, Phase 3a and Phase 3b awards



Source: PSDS project progress data from Salix

In terms of distribution of funding across sectors and grant values requested, the breakdown of awards aligned closely with the breakdown of applications. However, one difference in Phase 3b from previous phases (likely an effect of the introduction of soft sector caps) was the significantly increased proportion of awards to 'education' applications, whilst there was a reduction from Phase 3a in the proportions of local authority[61] and NHS awards.

2.7.1: Application assessment

Applications to Phase 3a and Phase 3b were reviewed by third party assessors. Applications could be rejected by Salix for a number of reasons, including ineligibility with regard to PSDS policy, failure to pass quality checks, and lack of response from the applicant organisation to requests for further information.

Programme information from Salix provides further depth on assessor concerns. Where applications were in theory eligible for funding[62], reasons for rejection included: lack of robust evidence on costs, insufficient information on site heat loss, energy ratings or projections of post-project heat demand, and a lack of schematics for the current heating system. A handful of applications were also missing project plans, risk registers, and / or evidence that DNOs had been engaged.

These issues raise several possibilities: 1) that some applicants had not fully read or understood the rules when preparing their application; 2) that applicants had understood the rules but were hoping a partially compliant project might still pass assessment; and 3) that applicants were rushing in substandard applications in the expectation that they could secure a place 'in the queue' and win a bit more time to address any outstanding gaps or issues. This issue is discussed further in the section below.

2.7.2: Award criteria

Phase 3b opened for applications on 12 October 2022; 84% of applications were submitted on that day. This is due to the 'first come, first served' basis on which applications were assessed, which has been utilised on all Phases of PSDS to date. Within the aforementioned soft sector caps, the applications were assessed in the order in which they were submitted, and if the application was deemed to be compliant with the scheme eligibility criteria and the applicant then met the necessary benchmark during deliverability calls conducted by Salix (for Phase 3b), it was awarded funding. When the funding for the Phase was all allocated, the remaining applications were rejected, even if they were submitted inside the official application window. The vast majority of unsuccessful applicants missed out on funding because applications were submitted later than others, not because they were non-compliant.

[61] The large proportion of local authority awards in Phase 1 is at least in part linked to Section 31 being used as a funding mechanism, which only local authorities could benefit from.
[62] Examples of ineligible applications were: boilers included in the project proposals were not 'end-of-life', low carbon heating comprising too small a proportion of the project, or £s per kW / CCT falling outside parameters.

As in Phases 1 and 2, many applicants and contractors involved in Phase 3a and Phase 3b (including those awarded funding) expressed strong reservations about this approach. It was felt to be detrimental to the stated objectives of the PSDS in a number of ways:

- It created a rush to submit applications for projects that had not been properly scoped, leading to an increased administration burden for Salix (as applications require greater scrutiny and potentially multiple iterations). This may have led to delays in award decisions, which in turn potentially leads to various project delivery challenges. Delivery issues in turn then create an additional burden for both grant recipient organisations (as issues are explored and change requests negotiated) and tends to lead to reductions in project scale / projected impact, or delays in benefits being realised.
- 'First come, first served' means that access to funding is almost entirely dependent on how quickly and efficiently an individual[63] can enter information into a template form. One applicant cited a situation in Phase 3b whereby their loss of internet connection for nine minutes meant they missed out on funding. Another applicant claimed to be aware of organisations investing in faster IT equipment, and more reliable and faster internet provision – and even identifying staff that can type, copy and paste quickly – in order to maximise their prospects of receiving PSDS funding.
- The quickest submissions might be expected to be from organisations with experience of these types of projects, forms and applications, and / or those able to source external support. These will tend to be larger and better resourced organisations. This view does not seem to be entirely supported by the statistics on awards (summarised in Section 2.8.1) - a wide range of organisations were awarded funding. In addition, the soft sector caps in Phase 3b go some way to addressing sector imbalances. However, interviewees across Phase 3a and 3b applicants have indicated that the need for quick submission, experience with the systems / forms, and the risk of not receiving funding despite substantial effort, is dissuading some (particularly smaller) organisations from applying at all.
- Some applicants voiced concerns about stress and pressure on the key individuals driving the application to win funding. They may not be successful, yet this might be entirely unrelated to the quality of their work.

To some extent, the rationale for 'first come, first served' was understood by stakeholders in Phase 1. At that time PSDS was a new scheme, levels of interest and anticipated uptake were uncertain, and funding needed to be distributed as soon as possible for the scheme to maximise its effectiveness as a stimulus to the supply chain. For the subsequent Phases, and especially beyond Phase 2, it is felt by some stakeholders that these considerations no longer apply, and it was not clear to them why the approach was still in place.

There is also a question – to be explored in Stage 2 of the evaluation – as to whether 'first come, first served' itself is implemented in the fairest way. If quickly submitted applications required further work / information, the applicant organisation is given the chance to provide that and their place in the 'queue' is held. This could lead – and some interviewees feel it has led - to a situation in which some applicants (potentially knowingly) submit an application that

[63] One Salix representative expressed concern that allocation on the basis of which individuals could "copy and paste the fastest" was potentially discriminatory.

lacks key information (thus saving time and ensuring an early submission). They are reassured that they will have a chance to address any deficiencies at minimal risk to their likelihood of receiving funding[64]. Meanwhile, another organisation taking more time and care to ensure they have provided all the necessary information before submitting could find their application rejected on the basis of speed. TPTA workshop attendees discussing Phase 3a felt that there were numerous instances of applicants prioritising speed over quality.

Across grant recipient workshops discussing Phase 3a and Phase 3b (and interviews, wherever criticisms of the allocation approach arose), respondents were prompted as to what system they might replace 'first come, first served' with. For context, these conversations occurred prior to the announcement of the Phase 4 allocation approach, which will replace 'first come, first served' with a focus on 'best value for money', based on projects delivering the most direct carbon emission reductions.

A common suggestion was for some form of ranking on the basis of impact i.e. selecting the projects that maximise carbon reduction per £ of funding. However, as this idea was explored, respondents acknowledged that this may introduce other imbalances; for example, large organisations having the potential for larger, more impactful projects, meaning smaller organisations in need of funding would miss out. Within sectors, there may be wide disparities between organisations (for example, a small school and a large academy trust). Equally, there would be challenges in comparing the cost effectiveness of a decarbonisation project in a modern, well insulated building with one in a much older, poorly insulated building.

Salix representatives expressed two key concerns with an allocation system based upon ranking by 'quality' or 'impact':

1. It would be challenging to develop the quality assessment criteria, and different stakeholders could have quite different views on what these criteria should be / how they should be scored / prioritised relative to one another.
2. The additional time and resources needed to assess applications and reach decisions in a timely way, particularly in the context that many applications may still be for a single year and under considerable pressure to get installations completed.

Several attendees to the wave 1 and 2 grant recipient workshops discussed hybrid approaches; for example, a 'first come, first served' approach but with a more robust assessment of project quality and deliverability. This was effectively the approach in Phase 3b with the additional deliverability checks.

Ultimately, grant recipient workshop attendees – and other applicant and contractor interviewees – found it challenging to think of award criteria that would entirely eliminate unfairness or advantages for certain organisations. However, most were of the opinion that 'first come, first served' carries more disadvantages and pressure than other approaches.

[64] One Phase 3a applicant – albeit unsuccessful - admitted to doing precisely this: leaving parts of the form incomplete just to get it submitted as early as possible – and risk rejection – rather than being guaranteed to miss out on funding.

2.7.3: Application scrutiny

Both applicants and contractors welcomed robust quality assurance on PSDS applications to maximise fairness and minimise 'rushed' / poor applications receiving funding. Despite Salix concerns that Phase 3a and 3b applicants found further iterations of queries frustrating, successful applicants that received requests for further information or clarification felt this was fair and had no issues with the questions raised or further data requested. Indeed, several applicants to Phase 3a and Phase 3b specifically praised the process of review and quality assurance on the applications, on the basis that it should, in theory, filter out applications that were submitted with little preparation or effort in the hope of winning funding. It should be noted that some applicants simply passed queries to the consultants they were partnering with, so queries on applications did not impinge greatly on them.

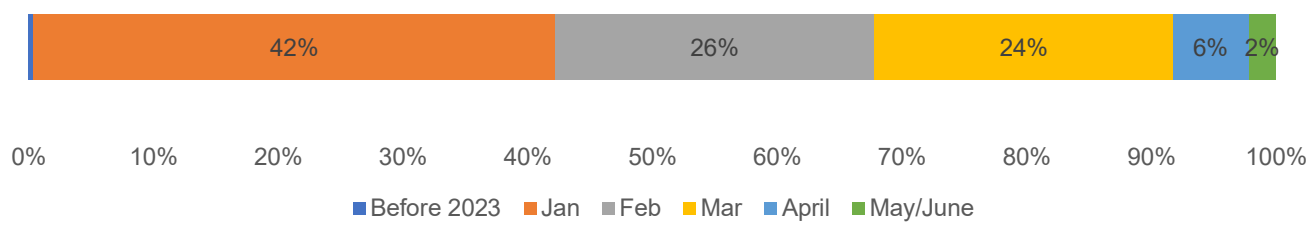
There was consensus amongst TPTAs that applications from schools were, on average, weaker than those from other sectors. More generally, some TPTA workshop participants claimed that the PSDS was starting to attract less experienced consultancies, and that this was resulting in lower quality applications and projects.

Grant recipients of PSDS Phase 3a and Phase 3b funding were generally supportive of the conditions attached to grant awards, although the number of these on some projects sometimes made the respondents nervous.

2.7.4: Communication of awards

Despite the Phase 3b application submission window closing on 31 October 2022, projects did not receive grant offer letters until early the following year. Regardless of the date the grant offer letter was received, the deadline for drawing down funding remained the end of March 2024 for single year projects[65]. Figure 6 shows that 92% of those awarded Phase 3b funding had received their grant offer letter before the 2023/24 financial year.

Figure 5: When Phase 3b applicants received a Grant Offer Letter (n=231)



Source: PSDS project progress data from Salix

On some Phase 3a and 3b applications, delays arose through the process of raising and addressing application quality issues or clarifications, sometimes requiring multiple iterations. However, a number of grant recipients felt the delay between application and grant award was

[65] Though it is worth noting that work could commence on Phase 3b projects as soon as the GOL was received, even if this meant work being conducted before the 2023/4 financial year.

excessive, especially in the context of the tight timescales they were being asked to adhere to. The delay was felt to have had knock-on effects on their ability to progress with crucial activities, such as scoping and procurement, which some were unwilling to undertake at risk without confirmation of the funding award. This in turn had detrimental effects on their ability to deliver the projects. Department representatives noted that speed of application processing had been an issue throughout all Phases of PSDS. They understood that in several cases, the delays contributed to projects being abandoned due to: (a) applicants no longer feeling works would be deliverable before the deadline for drawing down funding; (b) costs having risen substantially in the intervening period, and the originally planned work no longer being deliverable within the available budget; or (c) a combination of the two.

Department representatives attributed this to three main factors: 1) Salix staff turnover; 2) the increased amount and complexity of data required by applications, requiring additional analysis; 3) trying to find projects to fill any unexpected under-allocation e.g. by applicants withdrawing interest. The Department has allowed Salix to over-allocate slightly to try to smooth this, with the expectation that at least some projects will underspend / abandon.

As noted by Phase 2 and Phase 3 LCSF applicants, a further, albeit relatively minor, side effect of the 'first come, first served' approach to grant allocation is that many unsuccessful applicants do not receive feedback[66] that they can usefully apply to future project design and applications. Some unsuccessful applicants felt this was demoralising in the context of the substantial time and expenditure they put into the application.

[66] Beyond confirmation that their application fell outside the available funding.

3: Project delivery

This Chapter describes the progress and implementation of Phase 3a and 3b funded projects. The majority of Phase 3a and 3b projects have encountered some delays and cost inflation, with more than a tenth abandoning subsequent to grants being offered. Most (55%) of the Phase 3b single year projects were still – as of March 2024 programme progress reporting – expected to complete by 31st March 2024. However, progress reporting indicates that this has not been the case for most projects in previous Phases[67].

When asked about factors that would best ensure the successful delivery of PSDS projects, Phase 3a and Phase 3b PSDS grant recipients emphasised the importance of contractor selection. Some reported the benefits of contracting firms with whom they have a long-established relationship; this is felt to bring benefits in terms of knowledge of sites and buildings (so improved risk mitigation and management in terms of identification and avoidance). Several grant recipients felt that larger, well connected contractors were better able to secure resources that might be in short supply. Grant recipients and PSDS contractors also emphasised the value of engaging key stakeholders (such as Distribution Network Operators and planning departments) in the process as early as possible, as well as conducting robust site surveys and detailed design work before the project commences.

Challenges on Phase 3a and 3b projects are similar to those encountered in Phases 1 and 2 – in particular difficulties in obtaining skilled contractors and equipment (especially air source heat pumps), planning permission, and timescales for Distribution Network Operator (DNO) work. Cost inflation was the most commonly cited issue across Phase 3a and Phase 3b grant recipient respondents, and the main reason (reported in programme monitoring records) for projects abandoning. Grant recipients appreciated the flexibility of the scheme in the form of change requests, though some found this process quite onerous e.g. decisions taking what respondents felt was a long time, in some cases delaying project activity.

Overall, almost all Phase 3a and Phase 3b PSDS grant recipients interviewed felt that, to date, contractors had been of good quality. This view was often caveated where projects were not yet complete (proof of quality will be in how the measures operate and beneficial impacts delivered). However, in terms of installation work completed, most grant recipient interviewees reported no notable issues.

The project monitoring and reporting processes were generally felt by grant recipients to have worked well. Grant recipients valued having a dedicated Salix account manager, and many commented that these managers had been helpful and responsive throughout.

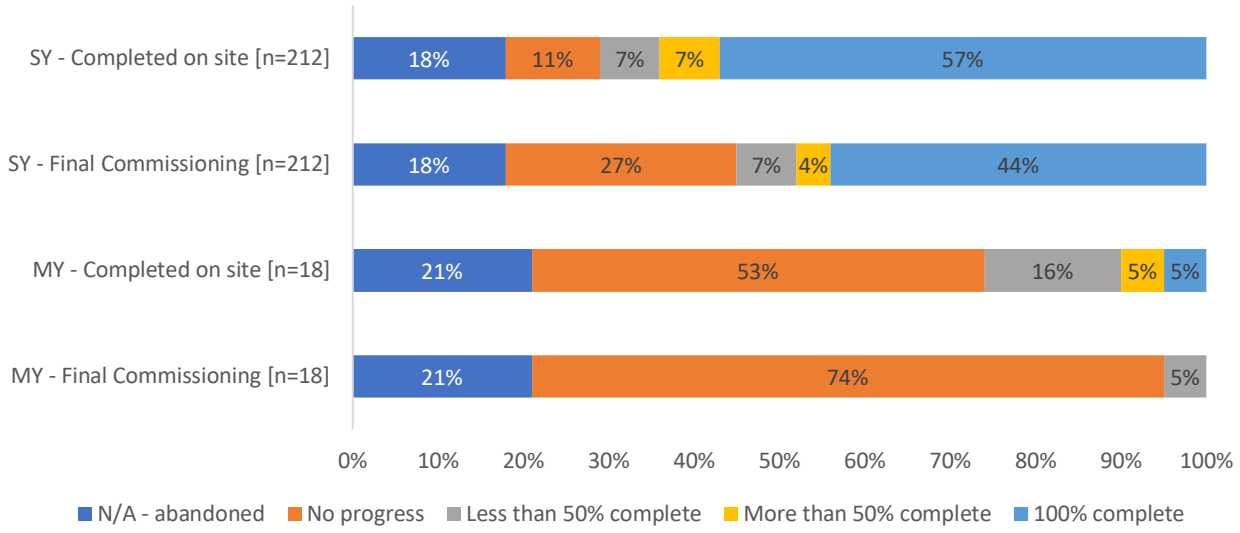
[67] As noted earlier in the report, grant recipients can use their own funds to meet costs incurred after the deadline.

However, monthly monitoring and reporting was felt by many participants to be excessive, particularly where works are yet to commence on site.

3.1: Overview of progress

Salix reporting on project progress enables assessment of the progress of funded projects subsequent to award. The following two charts show the progress of Phase 3a and 3b projects (split by single year and multi-year) as of March 2024[68].There are a number of ways of assessing project progress; the two charts below show the extent to which projects had completed installation of measures and completed commissioning of those measures.

Figure 6: Categorisation of the progress of Phase 3a Single Year (SY) and Multi Year (MY) funded projects



Source: PSDS project progress data from Salix

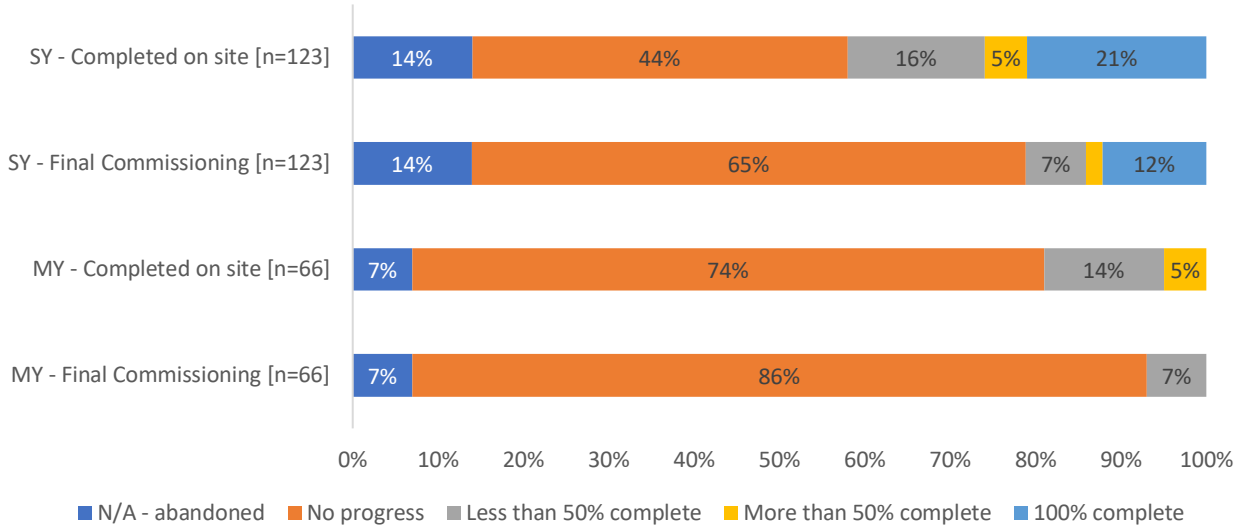
Salix reporting indicates that around a third of Phase 3a single year projects were completed by the grant deadline of 31st March 2023. Only 22% of Phase 3a projects are considered 'closed' by Salix[69]. Unsurprisingly, the average size of completed single year projects (in terms of grant value) is smaller than that of projects that are still live; commensurate with this, completion rates are highest amongst schools and FE organisations.

Amongst respondents to the Phase 3a single year project survey in Autumn 2023, half (49%) reported that all their funded measures were operational; 10% reported that none of their funded measures were operational at that time. Around a quarter of survey respondents with

[68] The last available figures before the interim report analysis commenced.
[69] In fact, illustrative of the delays projects encounter, over a quarter (27%) of Phase 1 projects, most commencing in early 2021, are not 'closed'. Internal Departmental reporting defines a 'closed' project as one where works are completed on site and grant paid; and linked to this, that Salix has ensured that all the necessary documents have been received, reviewed and signed; this includes invoices, photographic evidence and evidence of carbon savings.

uncomplete projects (n=7) did not expect to complete these until some point in the 2024/25 financial year.

Figure 7: Categorisation of the progress of Phase 3b Single Year (SY) and Multi Year (MY) funded projects



Source: PSDS project progress data from Salix

As with Phase 3a, it is disproportionately smaller projects that have already completed. As of March 2024, the average size of the five 'closed' Phase 3b single year projects (in terms of grant value) was £316k, with none exceeding £1m.

According to Salix figures from March 2024, 55% of Phase 3b single year projects are expected to complete by the deadline of 31st March 2024. Over two-fifths (43%) of active (i.e. not abandoned or closed) Phase 3b projects are categorised in Salix progress reporting as having a 'moderate' or 'high' delivery risk.

For single year projects, grant spend cannot happen after 31st March in the year after the Grant Offer Letter is sent. Project teams have tended to meet the post-March costs of on-site installation and any further works through alternative (usually internal) funding.

Whilst the majority of funded projects are expected to have spent their grant within the grant deadlines, there was underspend[70] on over a quarter of Phase 3a projects. As of March 2024, 42 Phase 3a projects (18% of projects awarded funding) and 29 Phase 3b projects (13%) had been abandoned; often due to unmanageable cost inflation and / or delays. As noted in section 2.8.4, Department representatives understood that in some cases the delays to grants being awarded had contributed to these issues. As might be expected, most (though by no means all) abandoned projects were single year projects.

[70] In a small number of cases (9) this was categorised as 'good underspend', i.e. the project costs had simply been less than projected. However, most cases of underspend were due to project teams needing to renegotiate what would be delivered, with a commensurate effect on expected outcomes; the majority of underspend categorisations (36) were for 'reduced benefits underspend'.

Qualitative interviews were conducted with representatives of six Phase 3a and 3b projects that were awarded funding but were subsequently abandoned. The interviews explored the reasons for abandonment (and how far these could have been anticipated), lessons learned and future planned actions. The key findings were as follows:

- Amongst these interviewees, reasons for abandonment fell into two categories:
    - Cost increases – linked to unforeseen DNO issues and/or delivery / equipment costs.
    - Changes in building use – including a decision to demolish a building entirely when asbestos was found post-award, and a council review of its portfolio resulting in a decision to cease use the building which was due to get PSDS-funded improvements.
- Whilst most respondents felt the reasons for project abandonment were unexpected[71], one respondent was frustrated that the consultant supporting their project design and PSDS application had not identified the potential for DNO costs. It should also be noted that one respondent with experience of PSDS Phase 1 felt the Phase 3 scheme was less flexible, and it was harder to agree re-scoping of projects.
- Although most felt that the challenges had been hard to foresee, most respondents identified learnings that they would apply to any future decarbonisation projects; these included:
    - Ensuring more complete knowledge of the organisational portfolio – and particular buildings – before preparing an application. This may include audits and feasibility work (several respondents mentioned using LCSF for this).
    - Earlier engagement with DNOs to establish a likely need for capacity upgrades and connections.
    - Greater consideration of the mix of buildings included in an application in order to keep the overall project well below the CCT.
- Regarding future activity, all interviewees were planning to do more decarbonisation projects and act on lessons learned. All reported that they were conducting proactive surveys and analysis of portfolios to inform PSDS applications. One had already applied to Phase 3c, whilst others would apply for future phases of PSDS when launched. One respondent said that their organisation focus, at least in the short term, would be more solar and energy efficiency than heat decarbonisation; they were also hoping DNO and heat pump costs would reduce in the interim.

3.2: Success factors

Both Phase 3a and Phase 3b PSDS grant recipients and PSDS contractors were asked for their views on the key ‘success factors’ that enabled projects to stay on track, and for commonly encountered challenges to be avoided or mitigated.

[71] For example, the decision to discontinue use of the building scheduled for PSDS improvements was taken at a senior level within the organisation and the project team were not informed until the decision had been made.

3.2.1: Contractor selection

Most responses focused on the importance of having the right contractors in place. Grant recipients particularly valued contractors with whom they had an established relationship and track record. The key advantages were reported to be that:

- These contractors had a better understanding of the client's sites and buildings, which meant they could anticipate (and if possible avoid) some of the issues that might take a less experienced contractor by surprise and therefore minimise costs and delays.
- Albeit often unsubstantiated, some grant recipients felt that these contractors would be more willing (on the basis of the established relationship between the organisations) to devote greater resource and effort to completing the project on time and to budget[72].

Other attributes cited by grant recipients and contractors themselves included:

- A wide-ranging role; having a lead contractor that sits across multiple aspects of the decarbonisation projects including project design, implementation and management, better enabling them to coordinate resources and ensure effective and efficient delivery.
- Scale / contacts; several grant recipients talked about the ability of their contractors to secure certain equipment that was, at the time, in short supply. They attributed this to the contractors' relationships / status in the supply chain.
- A long-term contract; as well as the aforementioned benefits of building an established relationship, one respondent reported that the benefits of appointing one contractor for delivery over multiple years is that it minimises procurement activity that can cause significant delay and resources[73].
- Contractor flexibility; being able to work around site requirements, including working during holidays, weekends and evenings.

3.2.2: Early stakeholder engagement

A number of respondents noted the importance of having placed orders for products (such as heat pumps) and having initiated DNO engagement[74] or planning permission processes as early as possible. It was not clear to what extent early ordering of equipment, such as heat pumps, preceded confirmation of the PSDS funding award, as many organisations would likely be unwilling to carry this sort of risk.

Finally, several grant recipients and contractors also emphasised the value of conducting robust site surveys and detailed design work before the project commenced. Several such respondents noted that this work should be done in advance of applying; the results can then

[72] On the other hand, regardless of a track record of working together, one respondent speculated that – rightly or wrongly – their status as a large council (and therefore significant client) had been an effective guarantee of good performance from the main contractor.
[73] The same respondent acknowledged that the potential disadvantage of this was that value for money is harder for them to ascertain.
[74] The Phase 3a and 3b application process required applicants to provide evidence of DNO engagement.

inform applications, but these respondents also felt there was little time to conduct these works within the Phase 3a timescales.

3.2.3: Internal resourcing

Salix representatives noted the importance, especially for such large capital projects, of grant recipient organisations having the right internal governance structures set up to more efficiently secure internal agreement and move ahead quickly.

Salix representatives also emphasised the value of a consistent project lead on the grant recipient side. For a number of projects where the original lead has moved on, respondent organisations have struggled to suggest a suitable alternative for potential interview when approached for the evaluation:

> *"Staff retention is really important; there's so much knowledge that you gain from that experience." [Salix representative]*

3.3: Challenges encountered

Across PSDS Phases, participant reporting of delays has been common. This is reflected in the actual and anticipated completion dates in programme progress reporting from Salix.

A very commonly cited issue across funded projects in Phases 3a and 3b and the main reason given for abandonments is cost inflation. This has included unanticipated requirements for DNO works, requirements to be met for planning permission, and / or sharp increases on contractor quotes provided to grant recipients at the time of applications.

> *"We did a preliminary assessment in terms of what a project would look like…by the time funding was provided and we had gone to tender the costs of the pumps had increased hugely." [Phase 3b grant recipient – School]*

Abandoned projects are disproportionately smaller projects; it may be that grant recipients for these smaller projects (often smaller organisations with smaller budgets) can less easily afford to absorb cost increases.

Cost inflation has been closely linked by both grant recipients and PSDS contractors to both inflation generally, and sharply rising energy costs in particular[75]. In the period between quotes for their application and re-quotes following PSDS award, Phase 3a grant recipients reported costs increasing by as much as 30%. Contractors also highlighted that some projects need to be costed on quite basic designs, with a number of uncertainties, meaning there is the potential for substantial cost increases following more detailed design work.

[75] The extent of project cost inflation will be analysed as more projects are completed in Stage 2 of the evaluation.

Cost inflation and project delays are somewhat interdependent; increases in costs may lead to delays as further procurement exercises, internal sign-offs and / or formal change requests[76] are concluded. And vice versa, delays to works have sometimes led to spiralling costs.

Salix has been ensuring applicants are aware of the cost inflation issue and recommending that projects build in contingency funds, yet the scale of inflation has sometimes exceeded expectations.

Whilst acknowledging cost inflation as an issue, TPTA workshop attendees discussing Phase 3a felt that project costs in applications were sometimes optimistic. A key challenge noted by TPTAs was that contractor quotes in applications often did not provide a sufficiently detailed breakdown of costs, or underlying assumptions. This makes benchmarking, essential to ensure that applicants are not subject to unreasonably high charges, very difficult. It was suggested that Salix provides a template cost plan to ensure that the required level of breakdown of costs is provided by all applicants. TPTAs also suggested cost benchmarks to provide applicants with insight into the levels of cost they should be expecting to pay to contractors.

Beyond inflation, key issues encountered by Phase 3a and 3b project grant recipients and contractors (that underpinned one or both of time delays and increased costs) are summarised below:

Table 5: Descriptions and examples of challenges encountered during the implementation of Phase 3a and 3b funded projects

Project delivery challenge	*Examples*
DNOs making unexpected demands, being unresponsive and / or lacking clarity on when works can be delivered. There was also a perception amongst several grant recipients that their DNO had been somewhat inconsistent, initially advising (i.e. around the time of application) that upgrades would not be necessary, but subsequent to site visits, deciding that they would. This incurred substantial costs and severely delayed project completion.	*"The DNO is not giving us the capacity. They need to put new substations in - one will take 12 months and the other could take 3 years. We were in contact with the DNO, and when we applied to PSDS there was capacity on the network, but a new housing developer has secured that capacity in the time between application and funding award. You can only secure the capacity by applying and paying and we couldn't do that until we knew we had been awarded funding, so we lost out." [Phase 3b grant recipient – local authority]*
Delays to provision of supplies / equipment, particularly ASHPs. A wide range of reasons were	*"The project has been delayed by procurement issues; we can't get approved*

[76] The survey of Phase 3a single year project grant recipients found that over a quarter had reduced the amount of measures being installed from the original application. Measures that were reduced in number, or dropped entirely, included solar PV, wall insulation (sometimes replaced by loft insulation), and GSHPs (sometimes replaced by ASHPs).

Project delivery challenge	*Examples*
suggested for this, including ongoing COVID restrictions in the country of manufacture, restrictions on import resulting from EU Exit, the war in Ukraine, and spikes in demand (attributed mainly to PSDS itself). As with cost inflation, a number of grant recipients and contractors pointed out that the timetabling of PSDS phases would inevitably lead to spikes in demand as a large number of organisations seek large heat pumps almost simultaneously.	*ASHPs of a suitable size." [Phase 3a survey respondent]* *"We have had several issues with suppliers and their ability to get hold of particular bits of equipment post pandemic." [Phase 3a survey respondent]*
Securing planning permission; this often arose for projects that included listed buildings, but several grant recipients also mentioned issues with measures (especially heat pumps) being deemed to cause noise pollution, and other planning policies have created delays and hurdles to implementation. Contractor workshop attendees described securing planning permission as a key challenge and risk across a number of projects, with timeframes reported to be uncertain, varying considerably depending on local authority capacity and workload[77]. One contractor pointed out that this challenge can be linked to the aforementioned issue around DNO connections, where DNOs need to secure planning permission themselves for necessary works.	*"Planning was a time-consuming process for the large project. We were aware there would be a number of hoops to jump through, but we weren't aware of quite how onerous this would be." [Phase 3b grant recipient – School]*
Site / building specific issues; these were often linked to discovery of issues that had not been apparent at the application stage as detailed surveys had not been possible in the time or available budget at that point. Examples include finding asbestos, nesting bats, and building structures in poorer condition than previously thought. In addition, many grant recipients report that it is challenging trying to install measures in normally heavily occupied buildings.	*"We went into this a bit naïve about the enormity of the heat pumps and they need acoustic fences for noise management, which has taken up the car park at the leisure centre." [Phase 3b grant recipient – local authority]*

[77] Several contractors suggested that it would be helpful for the Department to engage with local authority planning departments. It was felt that if planners had better awareness and understanding of PSDS and potential projects and technologies, both the speed of decision making and the likelihood of being granted planning permission would be increased.

Other less common occurrences causing delays (each cited by one or two Phase 3 participants) include key contractors going into administration, technology progression (particularly heat pump) making early design work somewhat obsolete, insufficient numbers and / or quality of responses to procurement exercises, and formal challenges to procurement outcomes (leading in at least one case to the organisation needing to re-run the procurement).

Linking back to project risk planning discussed in Chapter 2, the challenges arising on projects tend to have been due to an anticipated issue being more severe than expected, as opposed to applicants being oblivious to the possibility of certain issues. Despite this, based on the nature of some of the aforementioned challenges, it seems reasonable to conclude that with more robust scoping and earlier stakeholder liaison, a number of the subsequently encountered issues[78] could have been identified whilst applications were being prepared. As well as indicating in application forms some of the key risks' applicants should consider, Salix staff report that they are engaging applicants directly on this:

> *"The client is most experienced with their estate - but we are very experienced with project delivery as this is all we do. We cannot tell people how to manage their projects, but we can talk about key risks." [Salix representative]*

As noted, more robust scoping / more preliminary site and building studies may identify, and suggest solutions to, challenges in advance of grant award and project delivery. However, when the outcome of funding applications is uncertain, many organisations may be unwilling to make this level of additional up-front investment[79].

3.3.1: Energy price rises

Phase 3a and Phase 3b grant recipient workshop attendees were asked about the effect that rising energy costs have had upon project delivery, outcomes, and future appetite for decarbonisation. There were mixed views.

For some this was seen as a serious issue with detrimental impacts for current and future PSDS projects. As energy costs are also affecting the supply chain, several workshop attendees, as well as other grant recipient interviewees, reported having to seek further internal funding to cover increased quotes and supplier costs. Following project completion, several Phase 3a and Phase 3b grant recipients described how running costs had increased and in at least one case this was felt to have affected stakeholder appetite for further works.

Conversely, several grant recipients argued for a longer-term view, thinking that energy price fluctuations needed to be 'priced in' to long-term projects of this nature and these considerations should not affect whether or not organisations look to decarbonise.

[78] Particularly unexpected DNO and planning department demands, and the site specific / technical issues uncovered once contractors got on site.
[79] Applicants are being encouraged to design a tightly costed and specified project (albeit with contingencies) that encounters 'real world' obstacles anyway.

3.4: Salix management of project delivery

Phase 3a and Phase 3b PSDS grant recipients were asked for their views on Salix management of the project delivery stage, in particular the ongoing project monitoring procedures. Overall, views varied considerably depending upon the aspect of project management being explored.

3.4.1: Account management

The principle of Salix key account management, with each grant recipient assigned a lead contact, was welcomed by Phase 3a and Phase 3b PSDS grant recipients. In the main, this contact was felt to be very useful and supportive, clarifying the information required by Salix, but also coordinating the Department or Salix responses to questions raised by grant recipient project teams. Department and Salix representatives commented that the account manager structure is useful in identifying risks, keeping projects on track and minimising abandonments.

> *"The Salix account manager we had was absolutely fantastic. It was the first time we've been through this process and he was absolutely fantastic and made this a really smooth process for us." [Phase 3a single year project survey respondent]*

> *"I'd like to praise Salix for the way they run the scheme, and relationship managers. I've got a person I can always go to and ask questions and get answers very quickly." [Phase 3a single year project survey respondent]*

However, grant recipients in both Phase 3a and 3b raised one or both of the following issues regarding this role:

- Lack of a consistent contact; respondents reported that their 'lead' contact / account manager at Salix had changed several times. This was not felt to be too disruptive but did mean that they needed to spend some time familiarising new contacts with the project history and certain pieces of context. In addition, personnel changes were sometimes felt to have led to changing requirements from Salix.
- Slow responses to certain queries; respondents recalled these being technical queries and suspected that their account managers had needed to consult with colleagues. However, the reasons for delay were sometimes not communicated to grant recipients. Several respondents (both contractors and grant recipients) found the lack of, or slow, communication frustrating in the context of Salix demanding swift responses to their own requests.

Several PSDS contractors felt that it would be beneficial for contractors to have a direct channel to Salix to raise and resolve queries,

3.4.4: Processing change requests

Although satisfaction was not unanimous (i.e. where change requests had been rejected[80]), a number of Phase 3a and Phase 3b PSDS grant recipients were appreciative of the flexibility shown by the Department and Salix in the *principle* of accommodating change requests on project timescales and / or composition.

However, several respondents commented that the actual process of securing a decision on change requests could be quite drawn out, exacerbating project delays and sometimes putting projects in a sort of stasis.

> *"On one project we have had to stand the contractors down because we don't know when a change request will be approved." [Phase 3b grant recipient]*

Several grant recipients commented that it could be hard to obtain updates or clarity on the extent of, or reasons for, delay.

3.4.3: Monitoring and reporting

Phase 3a and Phase 3b PSDS grant recipients have a monthly catch up with their account manager and all are required to submit information to Salix around project progress and risks on a monthly basis.

Most grant recipients felt that the monthly reporting was more burdensome than it needed to be, especially for early months where there was little activity on site. Many reported that they need the assistance of lead contractors / consultants to complete the forms. In particular, several grant recipients commented that the requirement to provide spend projections for upcoming months was challenging, especially in the context of fast-changing project situations and costs. This then generates further queries and time demands where the next month's delivery does not exactly align to the projections. Linked to this, one respondent felt their Salix contact was not very understanding of some of the challenges that can be encountered on complex decarbonisation projects. Another said they would value a more flexible form where they can provide explanation and contextualisation of project progress.

> *"We do not have the required administration capacity to meet the deadlines and constant reporting that was insisted upon (even when the project was fully complete and operational)…It has stopped us from applying for further funding and is a barrier to us recommending the scheme to others." [Phase 3a single year project survey respondent]*

Salix representatives acknowledged that a substantial amount of relationship manager time was being used in the collation and entry of monthly reporting.

Whilst most Phase 3a and Phase 3b PSDS grant recipients receiving post-completion audits have found these to be fine, several felt these were unnecessarily stressful:

[80] Salix noted that change requests might be rejected for a number of reasons, including: insufficient information from the project team; if the adjusted project proposal is not deemed eligible, or feasible to deliver within the remaining grant timeframe; or if change requests are submitted after the deadline for these.

> *"We are currently undergoing a Salix audit and it's taken a significant amount of time and lots of questions. It's clear the latest information hadn't been passed to the third parties doing the audit; the project has changed…they had out of date information." [Phase 3a single year project survey respondent]*

Another issue mentioned by several grant recipient workshop attendees was regarding Salix communication around information requests. Respondents explained that even where information requests had (they understood) already been resolved, or figures were out by a very small amount, their organisation would receive 'official' letters about scheme conditions not being met. These letters tend to be sent to senior representatives in organisations, which then causes stress for project managers in explaining the situation and reassuring colleagues.

One workshop attendee also suggested that there should be a SharePoint for grant recipient organisations to be sharing documentation with their account manager, as this would be more secure than email, and there would be less chance of things being missed.

Several Phase 3b PSDS contractors were reluctant to deliver future work on PSDS-funded projects due to perceived increased work and administrative 'hurdles' compared to other work.

3.4.4: Reporting to DESNZ

Department representatives noted that the amount and granularity of scheme information provided to the Department by Salix has vastly increased since Phase 1 and is very useful. Two outstanding issues noted by Department representatives are:

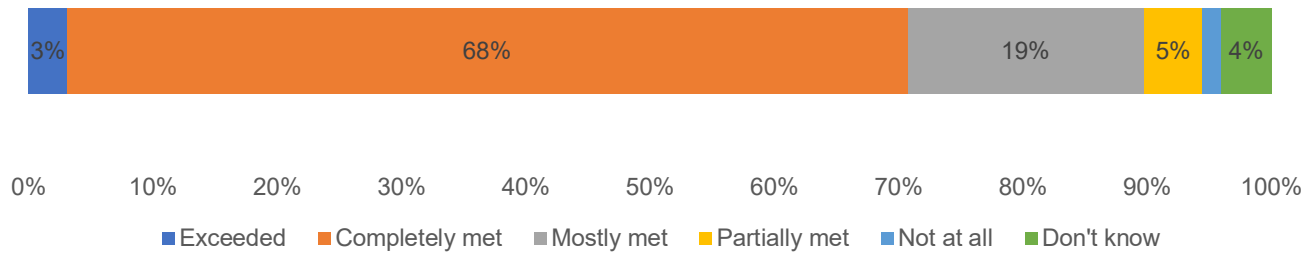
- The need to agree a more straightforward measure of funded project progress, and progress versus expectations, albeit one that takes account of the complexity and nuances in project delivery.
- Addressing glitches, errors and ambiguities in reported data (though it was acknowledged that the more data that is requested, the more likely this would be to arise).

More generally, Department representatives felt that Salix delivers the PSDS and LCSF schemes very cost effectively, achieving a large throughput of projects and retaining a good relationship with public sector participants.

3.5: Installation / contractor quality

All Phase 3a and Phase 3b PSDS grant recipients were asked for their perceptions of the quality of works on their PSDS-funded project(s). As most projects were not complete (not all funded measures operational) at the time of interview, many found it difficult to provide an authoritative view on the quality of the works. They felt that this assessment could only really be fully made once they could see how effectively the measures were working and delivering the projected benefits. The chart below shows the extent to which Phase 3a single year project survey respondents felt their expectations of installation quality have been met to date:

Figure 8: Phase 3a single year survey respondents' rating of installation quality versus original expectations (n=60)



Source: Phase 3a Single Year survey responses

Despite some projects being at an early stage, over two thirds of respondents felt their expectations of contractors and quality of works to date had been met. For some, this was because they were unaware of any particular issues with the quality of installation. Some simply made this assessment based upon their perceptions of the contractors, particularly where they had an established or longstanding relationship.

> *"They are a local contractor and they are keen to see these projects go well from a reputational point of view. The level of work on site is exceptional. We have a social value element to contracts and they have a good return on the targets set in the tender, employing local people to deliver the project." [Phase 3b grant recipient – local authority]*

Satisfaction was slightly higher amongst grant recipients for smaller projects (measured by size of grant). These may be easier jobs with less complications and thus less likely to encounter challenges that might then lead to dissatisfaction. Equally, such projects are more likely to be at or nearing completion, so respondents probably felt better placed to confirm quality.

Where expectations had not been met, and / or issues were encountered during delivery, Phase 3a single year project grant recipients often cited contractors taking longer than anticipated to complete certain elements. In some cases, recipients felt that contractors were at least partly responsible for delays arising from supply chain provision, planning permissions or DNO connections, on the basis that the contractor could or should have foreseen these.

> *"The quality of the actual installation work done by the contractors has been very good. The catalogue of design issues, legal issues…ordering of wrong equipment, and not providing information required around the power upgrade has been poor." [Phase 3a single year project survey respondent]*

> *"We had issues with leaking pipes and had to replace a number of thermostats and immersion tanks." [Phase 3a single year project survey respondent]*

Grant recipients and contractors on Phase 3a projects that had been completed were generally able to report that measures were operating as expected[81] and that 'snagging' issues had been non-existent or manageable[82]. Across respondents, reported quality issues were:

- A minor leak in a GSHP, found after some digging.
- An ASHP not heating water to a sufficient temperature.
- Issues with ASHP operation and integration into the heating system (and contractors being slow to respond to project team queries).
- A BEMS not working properly.

Where Phase 3a contractors had completed works, they reported having provided support to clients after installation. This was particularly in relation to the effective operation of heat pumps, including providing a user guide plus training for staff or other contractors.

[81] None were able to quote impact figures, but several said they were seeing the benefits / outputs expected.
[82] As in Phase 1, grant recipient definitions and interpretations of 'snagging' and 'minor issues' seemed to vary.

4: Project outcomes

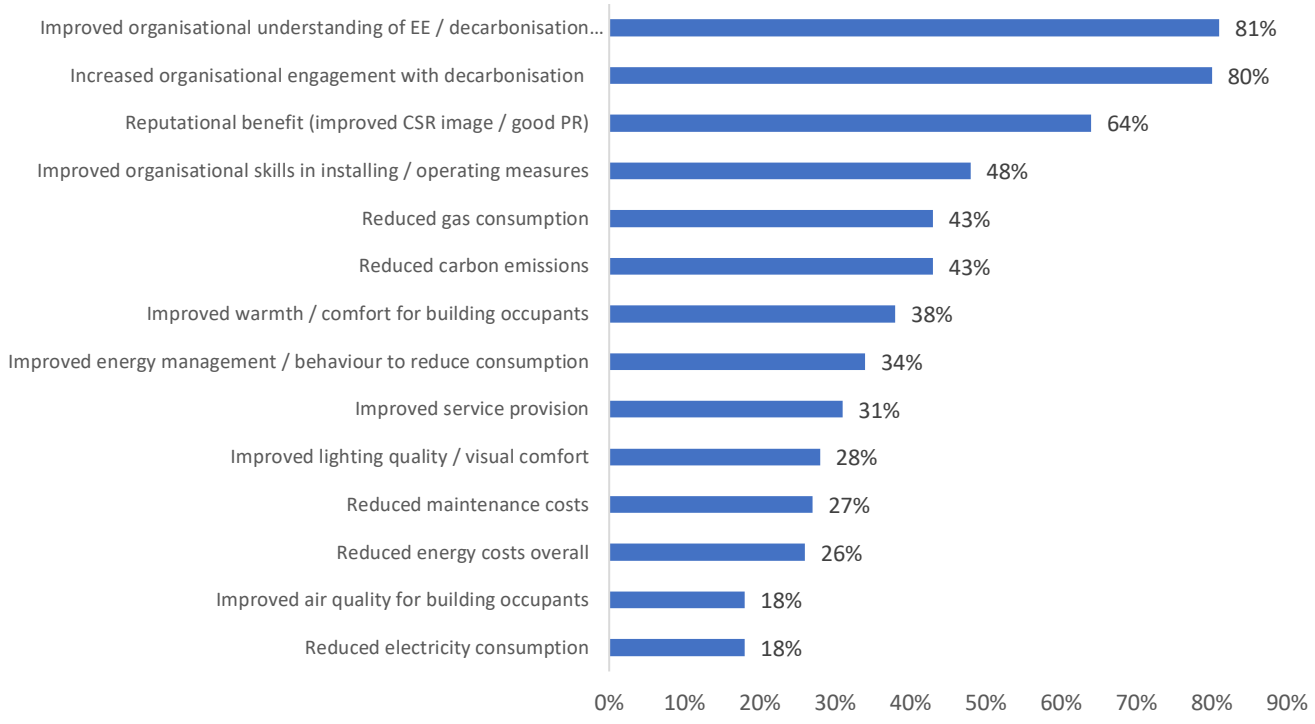
This chapter provides a summary of responses to the Phase 3a single year project survey, which explored early observed impacts from projects where at least some measures were operational.

Overall, whilst the short time elapsed between measure installation and survey meant most respondents were not able to provide robust quantification of impacts, almost all felt there had been positive outcomes to date. In particular, many respondents were confident that a range of organisational benefits (knowledge, attitudinal and reputational) had already been achieved. Respondents tended to be less certain of quantifiable metrics (carbon, energy consumption) at the time of the survey, though most expected these to arise and to be able to measure them.

4.1: Outcomes reported by project representatives

Almost all Phase 3a single year project survey respondents represented projects with at least one installed and operational measure. These respondents were prompted with a series of potential outcomes and asked which, if any, they had observed arising from the project to date.

Figure 9: Extent to which prompted project outcomes were recognised by Phase 3a single year project survey respondents (in Autumn 2023) (n=60, multiple response)



Source: Phase 3a Single Year survey responses

Where respondents agreed that outcomes had arisen, they were asked to elaborate on this. Responses on each of the prompted benefits are summarised in the table below:

Table 6: Summaries and examples of Phase 3a single year project survey responses on prompted benefits arising from funded projects

Reduced carbon emissions	Respondents were basing this on an assumption that the installed measures would reduce carbon emissions as they were replacing fossil fuel systems or intended to reduce energy consumption. Some respondents said that they had systems established to monitor carbon savings; others quoted figures that were included in their original project applications. *"We have over 200 panels working so there must be some effect."* *"There has been a drop in gas usage across the sites, this is where the carbon savings are coming from. We need to see a full year to get an accurate picture of this."* *"Removing gas (fossil fuel) has significantly reduced emissions, although the quantity has not yet been measured fully."*
Reduced gas consumption	Respondents who had replaced gas boilers with electric heating systems felt a reduction in gas consumption would be guaranteed, though in many cases heat pumps were not yet operational. *"We'll see an almost complete elimination of gas use on one site."* *"We have turned off four gas boilers and replaced them with ASHPs."*
Reduced electricity consumption	This was one of the less commonly observed benefits. Whilst many projects included solar PV to generate electricity, the overall effect of heat pump installation was often felt likely to have increased electricity consumption. *"PV and LED savings have more than offset the extra electricity used by heat pumps."* *"More energy efficient lights are reducing the electricity consumption."*
Reduced energy costs	Most respondents expected costs to fall in the long term and they sometimes have already, especially where solar PV was installed. However, recent rises in energy costs have meant costs have risen, even where actual consumption is known to have fallen. *"We expect a roughly £1m energy cost saving per annum."* *"We no longer have to buy fuel oil; the batteries are enabling us to use the electricity we are generating ourselves."*
Reduced maintenance costs	Especially where installations have only recently been completed, and with new and sometimes complex technology, many respondents anticipated that the time and resources required for technology operation and maintenance may increase, at least in the short term. However, many respondents also acknowledged that old, often failing, heating systems required substantial

	efforts to sustain them, and therefore the new systems should translate into reduced maintenance costs. "*We normally have a bi-annual service and numerous callouts for repair on the old boiler, now we will have once a year service."* *"We have gone from an ageing system at end of life, to a compact, and easy to manage and maintain, system."*
Improved environment for building occupants	This was most commonly increased warmth and comfort resulting from either (a) improved insulation / building fabric; (b) a more effective heating system, utilising heat pumps and building energy management systems (BEMS), especially where the old heating systems were unreliable. Some respondents also talked about lighting improvements resulting from the switch to LEDs, and air quality benefits where fossil fuels were no longer being burned onsite. One respondent even mentioned the aesthetic improvement to the building resulting from the project. Respondents often quoted colleague feedback as evidence of these impacts. *"The new system is much better…Staff have said that it's never been more comfortable than this."* *"Improved insulation has meant buildings are retaining heat better and we have received less complaints."* *"We previously had an old oil boiler that gave off lots of fumes."* *"Brighter corridor lighting and a better working environment."*
Improved service provision	Respondents anticipated that improved building environment and comfort would improve occupant experiences and – particularly pertinent for NHS sites – potentially even health outcomes. More generally, respondents commented that removing old systems that regularly failed or needed maintenance would mean less disruption for building users and so ability to conduct business as usual. Several respondents also argued that if the project leads to reduced costs, the money saved can be re-invested into core services. *"This will become clearer once the heating season has started, but in theory we should be able to use rooms better and make patients more comfortable."* *"Reduced costs (e.g. maintenance) so we can invest in core services. This would have been factored into the internal business case."*
Improved organisational skills / knowledge	This was often cited in relation to occupants being able to utilise the new BEMS to optimise heating and lighting in an energy efficient way. Specific to building and maintenance teams and engineers, respondents reported that there was now more understanding of the installation, operation and benefits of measures, particularly heat pumps. In some cases, teams within the organisation had been directly involved in the installation. Several respondents talked about colleagues being better prepared for future projects.

	"We have an internal services department, who have been trained to maintain and operate ASHP on the back of this." *"It's an amazing BMS that has over 300 sensors that help us to manage heating so much more successfully and efficiently."*
Organisational engagement with decarb-onisation	Many respondents simply referred to increased staff awareness (not necessarily translating into greater engagement and / or behaviour change), but some respondents reported increased senior management buy-in and ambitions. The projects had demonstrated that measures worked and the installation process was not too disruptive or onerous. "*We've got buy-in from people who were cynical about decarbonisation - councillors, executives - now they can see it really works."* *"Senior management are more engaged and have seen the benefits. We now have a group discussing and working on decarbonising more widely."*
Reputation / corporate social responsibility	PSDS projects fitted with broad organisational goals around decarbonisation and net zero, providing both a demonstration of organisational commitment and an exemplar that could be signposted as a possible route to achieving ambitions. Many Phase 3a PSDS grant recipients have sought to promote their project to other organisations in their area and / or sector. *"We've had open days, we've publicised the measures and they have been well received."* *"It's enhancing our zero carbon credentials; we've advertised it on the website, in the local press, at council meetings."*

As more projects funded in Phase 3 complete and start to generate impacts, evaluation activity in 2024-26 will increasingly focus on project outcomes. In particular, further quantitative surveys – both telephone surveys and the annual online survey sent to all grant recipients with completed projects (through Salix) – will seek to capture more quantitative impact data from an increased sample of projects. Coupled with this data, we will be analysing impacts on carbon emissions.

4.2: Further action

The Phase 3a single year project survey explored the extent to which grant recipients were planning further decarbonisation activity, and the influence of their PSDS experience on this. Overall, 91% of survey respondents (n=60) said that they were taking and / or planning further decarbonisation action. This was most commonly solar PV or building fabric measures, but over a third of respondents said that they were planning installation of more heat pumps.

> *"We would like to try and implement some of the measures that couldn't be funded [by PSDS] - the LEDs, the solar and the triple glazing."*

> *"We had an LCSF-funded review of our portfolio and identified the biggest gas uses, so we're looking at connection to a district heat network."*

Over half of those that are implementing or planning further action expect to use PSDS to help with this. Many had already applied to Phase 3c at the time of the survey. Otherwise, respondents tended to be using internal funding, particularly for more straightforward building fabric improvements and / or solar panels[83]. However, several referred to alternative external sources e.g. the DfE Carbon Reduction Grant.

When asked if the further planned or implemented action – beyond the Phase 3a/b project - would have been taken in the absence of the project, 25% of respondents said that it would not have been undertaken at all, whilst 53% felt that it would have been slower and / or less ambitious.

4.3: Heat pump supply chain impacts

Qualitative interviews with Phase 3a and 3b contractors have highlighted various benefits – revenue, reputational benefits, expansion of teams (particularly for delivery of low carbon projects), and greater investment in and upskilling of staff.

Interviews were also conducted with wider stakeholders suitably placed to comment on the UK's non-domestic heat pump supply chain overall. They included representatives of trade and technical associations and heat pump manufacturers.

4.3.1: Context – stakeholder views on the current heat pump supply chain

Before discussing the impact and importance of PSDS for the UK heat pump supply chain, respondents were asked about the range of stages, roles and skills that the supply chain comprises. Respondents mentioned:

- Sales (albeit less important for PSDS where clients are already engaged).
- Project design & consultancy including system design, technical and legal skills.
- Manufacture of equipment, including heat pump components and pipework.
- Installation, including bore hole drilling for GSHPs.
- Operation and maintenance (and, in many cases, client training).

The extent and type of skills at each stage would depend on the project. Respondents also noted the often substantial differences between domestic and non-domestic heat pump projects, particularly around pipework, which could limit the number of organisations able to deliver the latter. In terms of current supply chain capacity and capability, respondents cited the following challenges:

- Low levels of demand outside the public sector, especially due to electricity price rises and since the discontinuation of the Renewable Heat Incentive[84].

[83] Which would not, in isolation, be eligible for PSDS funding anyway.
[84] The Government scheme providing payments for domestic and non-domestic renewable heat generation.

- Long lead times on the manufacture of particular components e.g. heat exchangers.
- Shortages of sufficiently skilled manual labour across the construction sector in relation to heat pumps, but particularly plumbers, commissioning engineers and heating system designers (specifying heat pump types, sizes, flow rates etc.). Lack of design skills were felt to have led in some cases to oversized pumps and incorrect estimations of costs on PSDS-funded heat projects.
- Linked to this, attracting skilled tradespeople to work with heat pumps, felt to be hindered by the limited visibility of opportunities, most work still being in gas, and mixed messages from government e.g. pushback of the ban on replacement boilers off the gas grid to 2035.

4.3.2: PSDS influence on the supply chain

The consensus amongst wider supply chain representatives was that, particularly in the context of limited demand for heat pumps outside the public sector, the PSDS had become highly important to the non-domestic heat pump supply chain:

> *"PSDS is the only game in town… Without the PSDS, a significant proportion of the businesses operating in this sector just wouldn't be doing anything at all." [Wider supply chain representative]*

There was concern regarding the lack of viability of the heat pump market in a commercial setting. Some interviewees noted that whilst the commercial sector was not completely flat[85], sales of large heat pumps by UK manufacturers were mainly associated with the PSDS. One interviewee – a heat pump manufacturer - reported that PSDS funded projects constituted 60% of their heat pump business.

Wider supply chain representatives did highlight several ways in which PSDS could be refined to the benefit of the supply chain. PSDS is felt to be creating spikes in demand and so contributing to capacity problems for the supply chain; one respondent noted that this was true for DNOs as well.

> *"The problem is created by the timescales around the PSDS…creating a scenario where everybody is scrabbling for contractors." [Wider supply chain representative]*

One interviewee's understanding was that companies were not prepared to expand their capacity through recruitment, owing to uncertainty regarding the future of the PSDS.

> *"Because there's no visibility of PSDS 4 yet, the contractors are not prepared to recruit to cope with that workload in a defined period because they don't want to recruit, train, and then lay off people in six months' time if PSDS 4 doesn't materialise." [Wider supply chain representative]*

[85] One interviewee suggested that heat pump manufacturers were seeing a growth of interest in heat pumps from the commercial sector, albeit from a low baseline. They saw this as a response to the evolution of a regulatory environment that encourages low carbon solutions.

5: Scheme importance

This chapter explores PSDS influence on funded projects i.e. how important is the funding to the recipients, and to what extent would the projects (in terms of scale, measures and timing) have happened without PSDS funding.

Overall, Phase 3a and Phase 3b PSDS grant recipients' responses indicate that PSDS continues to be seen as vital in enabling many public sector organisations to invest in heat decarbonisation, in particular costly measures such as heat pumps. No respondent said they would have taken the same level of action in the same timescales without PSDS. As well as the funding itself, a number of grant recipients also valued the structure and impetus provided by the PSDS timetable, as well as the support from the programme team.

Interviews with non-participant public sector organisations highlighted that there is some level of heat decarbonisation happening concurrent to PSDS-funded activity. This is typically amongst larger organisations (such as NHS Trusts and larger local authorities) with the resources available to progress projects, though some have also drawn upon alternative external sources of finance, including leveraging private investment.

5.1: Participant views on scheme importance / influence

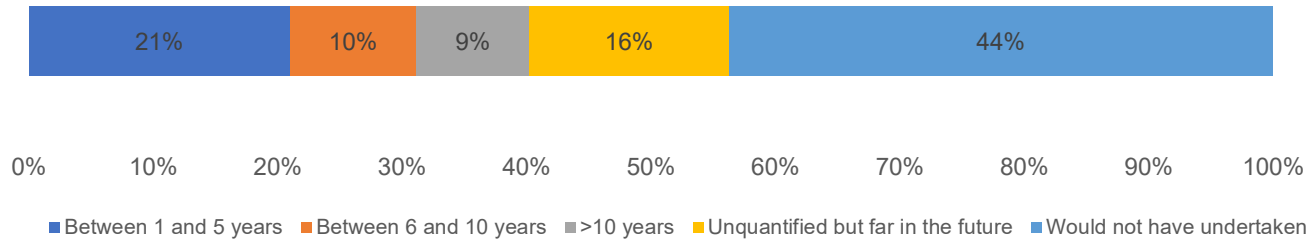
Part of the initial checks by Salix on PSDS applications is assessment of additionality. As part of assessing scheme influence on projects – and therefore potential for attributable impacts – for the evaluation, grant recipients were asked what they would have done in the absence of PSDS funding.

In qualitative interviews with Phase 3a and 3b grant recipients, PSDS financial support was seen as critical to efforts to decarbonise and meet organisational net zero goals. Almost all grant recipient respondents stated that without PSDS funding, they would not have had the finance to implement the projects supported by the PSDS. Several grant recipients acknowledged the existence of other funding programmes (e.g. the Condition Improvement Fund, or the Heat Network Efficiency Scheme) that could in principle be used for decarbonisation and energy efficiency measures, but emphasised that the scale of these (and therefore the works they could enable) were far smaller than the PSDS.

Amongst Phase 3a single year project survey respondents, over one third (36%) said that they would not have taken any action in the same timescales, whilst the remainder (64%) said that they would have done something in the same timescales without PSDS, but not the same level of action. No respondent said they would have taken the same level of action in the same timescales without PSDS. There were no clear differences in level of attribution across sectors; local authorities were most likely to say they would have done at least something without the PSDS, but this may reflect organisational commitments (e.g. climate emergency declarations).

Survey respondents were asked to estimate when, if at all, they might have been able to implement the measures that were included in their Phase 3a project:

Figure 10: When Phase 3a single year project survey respondents would have implemented the same project measures in the absence of PSDS (n=67)



Source: Phase 3a Single Year survey responses

As the chart shows, almost half of respondents (44%) were confident that they would not have implemented all the same measures. A further quarter said that either they could not envisage when they might have implemented the same measures, or that it would have been more than a decade without external funding.

As well as their Phase 3a project overall, survey respondents were asked about the importance of PSDS to the individual measures that their project comprised, with the same options being prompted: they wouldn't have taken the action at all in the same timescales (highest level of attribution), they would have done something in the same timescale but not at the same level, or they would have taken the same action in the same timescales anyway (lowest level of attribution). Looking only at measures featuring in at least five projects, the survey found that the highest attribution was most commonly given for ASHPs (87% of respondents selected this level). This level of attribution was least common for less complex and costly energy efficiency measures e.g. draught proofing (24%) and LED lighting (17%).

Some respondents pointed out that, as the existing heating system was (by definition) 'end-of-life', they would have had to replace it with something. However, despite fast-approaching organisational net zero targets, due to budgetary constraints this would almost certainly have been 'like-for-like' i.e. in most cases, a newer conventional gas boiler, likely more efficient than the old one. One respondent speculated that their organisation may have considered a biomass boiler in the absence of PSDS funding. Several respondents felt that in the absence of substantial PSDS funding for heat pumps, their organisations may have focused what budget they had on smaller fabric or other energy efficiency measures.

> *"We would probably have put a gas boiler back in because at the moment it's cheaper, it's quicker and that's what we're doing all over the place. I don't think we would have done this job without this funding at this stage." [Phase 3b grant recipient – NDPB]*

> *"Most of the measures would not have been delivered at all. We would have continued operating with the existing system, replacing only at failure. The replacement would need to be low carbon due to Local Authority targets…." [Phase 3a survey respondent]*

> *"Possibly the solar, we could have made this work [without PSDS]. But not the ASHP." [Phase 3a survey respondent]*

5.2: Possible alternative scenarios: activity not funded by PSDS

To build on the self-reported statements from grant recipients on scheme influence[86], interviews with non-participants in wave 1 explored the extent to which they were progressing decarbonisation activities without PSDS funding.

Overall, this produced a varied picture. Most, and particularly smaller, non-funded organisations had not been able to take any significant action. Many organisations – both unsuccessful applicants and eligible non-applicants – are focusing on HDPs and project scoping, identifying priorities and building a pipeline of projects, often with a view to applying for future PSDS phases.

A number of unsuccessful applicants and eligible non-applicants reported having taken more limited action, often focusing on energy efficiency (e.g. LEDs) or solar PV. There were examples of unsuccessful applicant organisations progressing substantial decarbonisation works without PSDS funding, albeit not necessarily the full scope of the projects some applied with. This activity has sometimes drawn upon other external funding sources (and in some cases leveraging private finance), but a number were apparently funded from internal budgets. Examples include the following:

- An unsuccessful NDPB applicant reported having self-funded all the decarbonisation measures they applied to Phase 3a with, including multiple ASHPs, although they have encountered some delays due to issues with their landlord.
- An unsuccessful HE applicant has progressed with the heat pump they applied to PSDS for using another external funding source, though this is now part of a much bigger refurbishment project and is expected to be significantly delayed[87].

It should be noted that PSDS aims not to support projects (like the above) that would be progressed anyway in the absence of the funding. Furthermore, it is widely acknowledged that whilst valuable to progressing decarbonisation, PSDS (at least in its current grant funding form) cannot fund the level of public sector activity necessary to achieve net zero by 2050. For those

[86] A limitation is that respondents may be inclined to emphasise the importance of PSDS to encourage its continuation.
[87] Several unsuccessful applicants felt that a key secondary benefit of PSDS participation would have been the added impetus for project progression (amongst stakeholders / decision makers) due to the PSDS deadlines.

public sector organisations allowed to access private finance (many cannot), this might highlight a supplementary route to decarbonisation and net zero without PSDS funding.

5.3: Wider benefits of PSDS

In the Phase 3a single year project survey, and qualitative interviews with Phase 3b grant recipients, respondents were asked about any additional benefits of PSDS participation beyond the funding itself.

A number of respondents acknowledged benefits to PSDS participation beyond the funding. These included maintaining organisational focus on delivery / preventing project drift, raising organisation and contractor motivation to explore decarbonisation, and providing a relatively de-risked way of trialling measure installation and assessing contractors. Several respondents talked about the learnings provided by the PSDS-funded project that could be applied to future works.

> *"PSDS is well-known enough to push orgs to do prep work they might otherwise not do; checking stock and determining eligible buildings." [Phase 3b grant recipient – local authority]*

> *"The fact that the grant had to be spent within the year was a good focus to ensuring that the contractors remained focussed and deadlines were met. The project would almost certainly have slipped without the funding deadline." [Phase 3a survey respondent]*

> *"The funding was significant, but PSDS also helped by drawing attention to what's available and bringing to our attention where equipment has gone beyond it's normal lifespan." [Phase 3a survey respondent]*

6: Scheme development

Across the preceding chapters, there are a number of aspects of PSDS design and delivery that were felt by participants (both grant recipients and contractors) to have worked well. The scheme continues to attract a large volume of applications and the rationale for more rigorous application assessment was understood, and in many cases welcomed. There was a largely positive response to most scheme policy changes, particularly the introduction of multi-year funding allocations. Salix's communication and account management throughout project delivery was also praised. Chapter 5 evidences the ongoing importance of the PSDS to the public sector in delivering decarbonisation.

Within this context, Chapter 6 summarises public sector organisation and contractor suggestions on how the PSDS in particular (and policy more widely) could be enhanced to support decarbonisation and encourage projects. Key suggestions across evaluation activity on PSDS Phases 3a and 3b and LCSF Phases 2-4 were as follows:

- Adjusting scheme timescales; some single year grant recipient issues with the annual 31st March deadline for delivery are addressed by the introduction of multi-year funding; respondents also suggested staggering application windows across the year.
- Considering the relative value of alternative approaches to the 'first come, first served' approach to application review and grant allocation.
- Greater medium-term certainty on further phases of PSDS, providing greater confidence for the public sector, contractors and supply chain investment.
- Consideration of an increase in the CCT to take account of sharp cost increases across almost all aspects of project delivery.
- Greater flexibility on which aspects of project delivery PSDS funding can be used for and provision for coverage of unexpected costs e.g. electrical capacity upgrades.
- Whether as part of PSDS or more widely, Salix / the Department could facilitate: (a) A centralised framework of approved contractors to deliver decarbonisation works, better ensuring quality and reducing per project administration (and potentially costs); (b) More detailed case studies of exemplar PSDS projects, and greater networking opportunities for public sector organisations delivering – or planning to deliver – decarbonisation projects, to build understanding of how to deliver projects / pitfalls etc.; (c) Provision of loan funding, particularly for the building fabric / energy efficiency measures decreasingly supported by PSDS.

6.1: Enhancing the PSDS

6.1.1: Timescales

Whilst there was a general understanding amongst Phase 3a and Phase 3b PSDS grant recipients and contractors of the underlying pressure for the scheme to adhere to budget years, scheme timescales were frequently cited as an area for the programme team and policy makers to examine. As highlighted across Sections 2 and 3, the timescales for single-year PSDS projects were felt to have been the underlying factor in a number of issues across the project lifecycle, many of which have a direct detrimental effect on the delivery of PSDS objectives. These issues were also described extensively in previous evaluation reports; they can be summarised as follows:

- Applicants selecting projects on the basis of deliverability within the limited timeframes, as opposed to their suitability, or maximising decarbonisation benefits.
- Limited time for applicants to properly scope selected projects, meaning a greater risk of unexpected issues (leading to increased costs and delays) when contractors get on site and commence works. Such issues often necessitate negotiation of project change requests, which themselves bring significant delays and require substantial resource from both the project and programme teams.
- Inflation of project costs; caused by a spike in demand for products and services. This, and applicant responses to it through inclusion of contingencies, could mean that PSDS is not achieving the value for money it could with more relaxed timescales.

The provision of multi-year funding and planning year applications somewhat addresses these issues. These options mean that grant recipients do not need to rush into delivering a project that has not been properly scoped (i.e. ‘investment-grade’ surveys can be undertaken, reducing the risk of unexpected issues, costs and delays arising). Organisations can take a more considered, thorough approach to the procurement of expertise and equipment, securing planning permission, and securing DNO engagement and commitment to any necessary works.

Linked to timescales, several Phase 3a and Phase 3b PSDS grant recipients and contractors suggested that the application windows for the PSDS should be more staggered to reduce competitive rushing for funding across the whole public sector, as well as alleviating spikes in demand for particular products and services / expertise. Regarding schools and FE / HE institutions in particular, a number of grant recipients pointed out that there are only certain limited windows in which significant works can be conducted on site, and current PSDS timeframes do not always adequately account for this.

6.1.2: Award criteria

The various issues with the current ‘first come, first served’ funding allocation approach are discussed in Chapter 2. Yet this section also highlighted that many respondents struggled to think of an alternative approach that would eliminate, as opposed to simply shifting, imbalances. It was acknowledged by both Phase 3a and Phase 3b PSDS grant recipients and

Department representatives that, due to the diversity of the public sector (in terms of both building stock and organisational capability), having a completely level playing field (both between and within sectors), whilst also maximising carbon cost effectiveness, is very challenging. From conversations prior to the announcement of the change to allocation in Phase 4, the following suggestions were provided by respondents as potential alternatives:

- More frequent funding rounds, which could help to address a number of issues including applicant perceptions of pressure (which could lead to prioritisation of speed, and over-optimism) and reducing spikes in demand for contractors (which can lead to delays and price inflation).
- Assessment of *all* applications and allocation on the basis of quality criteria. Respondent ideas for alternative criteria included: the age of the systems being replaced; the beneficial outcomes being delivered (taking into account both wider benefits and numbers of beneficiaries); assessment of likelihood of completion.
- A two-stage application process – an initial light touch technical appraisal, followed by a full and more detailed application stage for applications that pass the appraisal.
- Different requirements (e.g. on CCT) for different profiles of project and / or applicant to avoid penalising smaller organisations with less scope to reduce their emissions.
- Several respondents suggested that in the next phase of PSDS, a budget could be specifically reserved for organisations that had never previously received PSDS funding.

Linked to funding awards, many Phase 3a and Phase 3b PSDS grant recipients called for much quicker turnaround of application decisions from Salix.

6.1.3: Other enhancements and improvements

Evaluation activity on Phase 3 to date has generated a number of other ideas and suggestions as to how PSDS, as it is currently structured, could be further enhanced:

- Greater medium-term certainty on further phases of PSDS[88]. It was argued that this would be critical for both public sector organisations (factoring PSDS availability into their HDPs and strategies) and contractors (creating greater confidence around investing in skills, capacity and equipment)[89]. Linked to this, many respondents asked for either greater consistency of policies between Phases (e.g. on eligible measures, or CCT), or more advanced notice of likely changes to these.
- Greater flexibility in response to unforeseeable project delivery issues. The participant experience is clearly quite varied on this, as many Phase 3a and Phase 3b PSDS grant recipients have had change requests approved by Salix. However, several grant recipients cited cases where despite seemingly fundamental and uncontrollable issues (such as a

[88] To an extent, greater certainty, at least for grant recipients, is provided by the multi-year funding, that could fund works up to three years beyond the application, albeit the composition of the project is somewhat fixed at the point of application. Phase 4 funding was announced for 2025/26 to 2027/28 in February 2024.
[89] A view from several wider supply chain representatives was that in the short term at least, PSDS will be integral in sustaining the UK heat pump market.

lead contractor going into administration), they were still required to complete their grant spend by the end of March.

- Considering a greater PSDS emphasis on energy efficiency. Multiple Phase 3a contractors highlighted issues with oversized heating systems resulting from a failure to optimise the heating system. Issues included the inefficiency in terms of resource use, occupant discomfort if fabric measures are subsequently installed, and the unnecessary additional pressure being placed on the grid. The latter was also cited as an issue because it then creates a need for DNO involvement in the delivery of projects. Linked to this, several TPTAs also highlighted a lack of robust metering data leading to incorrect sizing of heat pumps and so reducing the beneficial outcomes of the scheme.
- Greater flexibility on costs; in particular, Phase 3a and Phase 3b PSDS grant recipients and contractors suggested that (a) especially in the current economic climate, there should be greater allowance in application costs for inflation[90]; and (b) allowance for the costs of electrical capacity upgrades to be added to project costs and grant values, as these costs can be substantial, but often unknown at the time of applications.
- TPTAs recommended more investment in scheme design, including an increase in funding to support PSDS applicants with this. Whilst LCSF covers some of the work required to formulate projects, it was felt that more was needed to bring projects up to the requisite RIBA stage. The Heat Network Efficiency Scheme (HNES) was identified as a good model, with funding provided in two tranches, with the second (larger) tranche only being made available once there is a robust case.
- Whether as attached to PSDS, or positioned as more general, a number of respondents felt it would be beneficial for public sector organisations to have access to a centralised framework of approved contractors to deliver decarbonisation works (from development of plans and projects to implementation and installation). It was noted that each organisation conducting their own procurement exercises, with sometimes limited knowledge and expertise of the market, is inefficient and can lead (has led) to some sub-optimal outcomes on project delivery (e.g. poor quality works, and / or cost inflation). This has created issues in terms of both delays to projects and, in some cases, poor installation and reduced impacts. Linked to this, several contractors emphasised the benefits around discounts and economies of scale if, for example, supply of a large number of ASHPs was negotiated by a ‘PSDS framework’, rather than hundreds of individual public sector organisations conducting their own negotiations with suppliers for different projects.
- Several respondents suggested that as part of PSDS, Salix could facilitate networking for organisations to better understand how to deliver projects (what needs to be considered, potential pitfalls etc.). Linked to this, a number of respondents felt that there should be more technically detailed case studies of PSDS projects from previous Phases to provide potential applicants with both an idea of what could be done, and a practical route to delivering it and overcoming challenges. It was pointed out that where lessons could be learned to avoid or address common sector-specific or cross-sector challenges, this could save huge amounts of resource for both project teams and Salix. It was also noted that

[90] Although this can be accounted for in contractor quotes and contingency budgets.

where case studies can provide quantified evidence of certain measures delivering impact, this may help to overcome reservations about those measures within the organisation and contractors.

6.2: Wider policy: funding public sector decarbonisation

Both grant recipients and contractors emphasised the importance of further rounds of PSDS, to continue public sector decarbonisation efforts and provide greater certainty for the supply chain to then invest in recruitment and skills development[91].

It was acknowledged by Phase 3a and Phase 3b applicants and contractors that the current funding model and size of PSDS will not be sufficient to deliver net zero and public sector decarbonisation at the scale or pace required to meet UK targets (and indeed the individual targets set by different public sector organisations).

The sources utilised by non-funded organisations to progress decarbonisation, described in Section 5.2, provide some indications, *for a subset of public sector organisations*, of viable supplementary routes to funding projects, in particular leveraging private investment. These avenues could be further explored with respondent groups in later stages of the evaluation.

The Phase 3a and Phase 3b PSDS grant recipients' workshops explored the potential appetite for utilising loan funding[92]. Most were non-committal, saying that they would need more information on likely repayment interest rates (vs. using, for example, the Public Works Loan Board) before they could provide a meaningful response.

However, a number of workshop attendees and interview respondents (unprompted) referenced the Public Sector Energy Efficiency Loan Scheme (PSEELS; delivered by Salix prior to PSDS). Whilst recognising that this scheme had been focused primarily on energy efficiency measures with limited payback periods, respondents were overwhelmingly positive about it. Some directly said that they would welcome the re-introduction of the scheme for similar measures. A number of respondents said that they could envisage PSDS grants and a loan scheme being combined to fund projects comprising a mixture of high cost heat decarbonisation and fabric measures, offset by more financially viable investments such as solar PV and straightforward energy efficiency measures. Several attendees said they would be better disposed to loan funding if it comprised a rolling application approach and came with greater flexibility around timescales for delivery.

Several workshop attendees questioned the point of loan funding covering measures with very competitive payback timeframes, as the business case could therefore easily be made for investment from the organisation's own budgets, though this point was countered by another

[91] Related to skills development, several contractors noted the greater emphasis on 'social value' in public sector contract notices, but there was some scepticism as to the importance of this relative to price.
[92] Whilst not integrated into the scheme, guidance for Phase 3c of the PSDS does signpost UK Infrastructure Bank funding as a supplementary source for applicants to consider.

attendee who highlighted that some organisations simply do not have the internal budget to invest, regardless of return on investment.

Finally, a suggestion from respondents was for Government to consider how some of the currently disparate funding sources across Departments[93] could be amalgamated with PSDS to deliver larger funds, with greater efficiency, and enable more impactful decarbonisation projects. Linked to this, several respondents suggested that there should be a clearer roadmap of all short- and medium-term funding for public sector decarbonisation i.e. beyond simply PSDS.

[93] For example, the Condition Improvement Fund, and Government funding for heat network design and delivery.

Appendix: Theory of Change (ToC) tracking

To inform the evaluation, a Theory of Change (ToC) has been developed for the PSDS and LCSF. This sets out the scheme inputs and activities, and their intended effects on / how they are intended to link to the outputs, outcomes and impacts being targeted by the schemes. The ToC is underpinned by a number of assumptions about how stakeholders can or will respond to the schemes and the way in which funded projects are designed and delivered. The full diagram and description of the ToC is provided in the separate technical annex accompanying this report.

Drawing on the evaluation findings to date, the following table provides a summary assessment of the evidence against selected links and assumptions in the ToC.

Table 7: ToC link/ assumption and summary assessment to date

ToC link / assumption	Summary assessment to date
Eligible organisations are sufficiently aware of the scheme and what they need to do to apply.	There is some suggestion of low awareness amongst smaller organisations, and less experienced organisations are felt to find it harder to address the increasingly complex requirements of applications. However, there is widespread awareness of PSDS in most sectors, and each Phase of PSDS continues to be heavily oversubscribed.
Pre-release of scheme and application guidance supports high quality, timely applications.	Hard to assess the counterfactual, but applicants are almost unanimous in (a) complimenting the guidance – both written and through webinars – provided by Salix; (b) emphasising the importance of this being released well in advance of the application window opening, so projects can be better prepared.
Access to multi-year funding increases demand and size of projects, as having more than one year to deliver makes more retrofit projects feasible.	Analysis of application and award databases clearly shows that multi-year projects are, on average, much larger than single year projects, in terms of both overall project cost and grant value requested. Anecdotally, several multi-year project recipients have said they could not have delivered the project in a single year.
Measures are installed in a timely manner.	Installed, for the most part, though various project challenges and delays mean this is by no means universal. However, with delays to DNO connections, the key question is whether installed measures are actually ‘operational’. Some Phase 1 projects are not complete and fully operational even years after ‘installation’.

Applicant organisations have skills and resources to manage project delivery.	A mixed picture. Most applicant organisations, and certainly grant recipients, seem to have teams in place with the experience and expertise to manage projects, often including external consultants / lead contractors. However, this doesn't seem to be preventing some project-abandoning issues arising, and Salix has questioned internal governance arrangements in some organisations.
Sufficient suppliers, skills and equipment.	Not clear at all. As noted by wider supply chain representatives, PSDS creates spikes in demand for equipment and services that the current supply chain capacity cannot easily meet. Many projects are encountering delays due to equipment availability or skills shortages.
Increased, sustainable demand for decarbonisation supply chain and increased capacity for decarbonisation installation.	Wider supply chain representatives are not seeing this, partly due to limited demand for heat decarbonisation measures outside of PSDS, and partly due to industry uncertainty about the long-term status of PSDS, which dampens willingness to invest in growing skills / teams.
A 'whole building' approach is achieved, thereby delivering decarbonisation goals effectively.	PSDS certainly encourages a whole building approach to reduce heat demand, and most applications include energy efficiency or building fabric measures; though several rules (including the current CCT) are felt to constrain the level of investment in such measures.
Measures are correctly installed, perform as expected and are optimally operated.	For many Phase 3 projects, it is too soon to say for certain, but grant recipients are generally confident of the quality of installation, measures seem to be working as expected, and reported issues are rare.
Decarbonisation projects generate other benefits including improved quality of public sector service.	It is relatively early in Phase 3 project completion for robust assessment, but Phase 3a survey respondents claimed to be observing a wide range of organisational benefits, including improvement of core service provision through improvement in the building environment.
Estimated carbon savings are delivered / projects reduce carbon emissions in public sector buildings.	Almost certainly, in that across a number of projects, the measures expected to deliver these outcomes are installed and operating, though most Phase 3 participants are yet to collate and provide robust, quantified evidence of this.
Good distribution of projects across public sector.	Good representation of various regions and sectors within the wider public sector, even better ensured through soft sector caps. There continues to be concern about whether the

	current scheme policies favour larger and more experienced organisations, even within each sector.
Delivered projects are cost effective.	In principle they are sufficiently cost effective, in that all funded projects adhere to the £325 CCT. However, a number of stakeholders are claiming that heat pumps are oversized and point to sometimes severe cost inflation, in part caused by spikes in demand due to PSDS timing.
Further implementation of projects in and outside the scheme in the public sector.	There is definite evidence of public sector participants planning further decarbonisation / energy efficiency action, and this is often attributed, at least in part, to their previous PSDS-funded project. However, where substantial measures are planned (heat pumps as opposed to straightforward energy efficiency or solar), most respondents expect they will need to continue to use PSDS funding.
Improved capability and ability to specify decarbonisation projects.	Certainly LCSF-funded HDPs, previous application experience, and support from external consultants, is helping organisations to consider the most effective decarbonisation options and design specific projects. The PSDS application process is also providing valuable scrutiny for projects and highlighting key aspects of projects that should be considered in advance of delivery e.g. communications with DNOs.
Grants fund projects without creating debt.	The grants lessen the costs incurred by the participant organisations, but there is still an expectation for them to contribute to a certain level and some, especially smaller, organisations, struggle to obtain that funding. However, applicant contributions seem to be entirely from existing internal budgets rather than being met by organisations incurring debt. There remains the question of whether organisations would have incurred debt for similar measures in the absence of PSDS, though there is willingness to use low-interest loans for measures with a shorter payback timeframe.
Carbon cost criteria promotes future proofed projects.	Less clear, in that the CCT may be managing costs and minimising investment in ‘low hanging fruit’ energy efficiency measures. However, it is also felt to be limiting selection of more impactful long-term technologies e.g. participants choosing ASHP over GSHP or heat network connection.

This publication is available from: www.gov.uk/government/publications/public-sector-decarbonisation-scheme-psds-evaluation-of-phase-3

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