"The best gift I ever received!"

Connecting Homes For Health

Final project report

NEA

Action for Warm Homes

Prepared by National Energy Action for Northern Gas Networks
June 2020

Author
Dr JAMIE-LEIGH ROSENBURGH
Senior Research and Policy Officer
National Energy Action

PREFACE

This report explores the experience of people participating in the Connecting Homes for Health pilot scheme; a research project designed to test and measure the health and fuel poverty-related impacts of providing free gas grid connections, free first-time gas central heating systems and energy efficiency advice to households living across County Durham and Sunderland.

Participants in the project were extremely vulnerable, suffering from ill health and facing financial hardship and deprivation. However, they did not wish to be defined by their circumstances and instead looked for ways to live as happily and as comfortably as possible. Their energy experiences were inextricably interwoven with multiple facets of their lives, and their heating and hot water systems influenced: their ability to feel warm and comfortable at home; how far they could carry out everyday activities around the house; their financial stability; the care they were able to give to loved ones; how well they coped with illness; the level of physical and mental health and wellbeing they were able to enjoy; their sense of self-worth; how connected they felt to their community and own family histories; the trust they had in people around them; and their ability to maintain social relationships.

The report revisits households at different points during the year following their free gas grid connection and installation of a free gas central heating system. It explores what the change to gas has meant for participants, both in their everyday 'energy lives' and beyond. It looks at the transformations that have occurred in how their heating and hot water systems are managed, and changes in the level of thermal comfort and control that they experience at home. It explores the impact of the intervention on financial management and stability, as well as changes to family practices and relationships. Impacts beyond immediate energy-related changes are also identified, including how participants relate changes to their heating and hot water systems with changes to their physical and mental health and wellbeing, as well as their ability to cope with illness or give care to a loved one. As such, it tests and measures the impact that the application of health-based eligibility criteria to the provision of gas grid connection and energy efficiency support can have on the fuel poverty and cold-related ill health risk of vulnerable groups.

The Connecting Homes for Health pilot demonstrates the potential for measures-based Warm Home Discount Industry Initiatives (WHD II) funding to complement the Fuel Poor Network Extension Scheme (FPNES) when it is combined with appropriate and evidence-based targeting mechanisms, to bring greater comfort, reduce hardship, improve health and alleviate the burden of just 'trying to cope' with difficult, expensive or non-existent heating and hot water systems. As such, the project is an indication of the benefits that can be brought to bear on situations of fuel poverty and cold-related health inequalities by developing replicable pathways using existing mechanisms for assistance (like WHD II and FPNES) alongside the application of existing sources of publicly available data.

CONTENTS

The Connecting Homes for Health pilot: What was it? Who did it help and why?

The Connecting Homes for Health pilot research project aimed to provide 80 to 100 fuel-poor households (who were vulnerable to cold-related ill health) living within parts of the North East catchment area of Northern Gas Networks - namely County Durham and Sunderland - with free gas grid connections, first time gas central heating systems and free energy efficiency advice in order to:

1. **Test and measure** the impact of applying health-based eligibility criteria to the provision of gas grid connections and first-time gas central heating measures on the health and wellbeing of vulnerable residents who are in or at risk of fuel poverty
2. Support the **direct application** of relevant national public health guidance[1]
3. **Develop recommendations** for gas grid connection procedures which enable the health impacts of living in a cold home to be addressed, including the adoption of health-based eligibility criteria for the Fuel Poor Network Extension Scheme (FPNES) following the end of the current RIIO-GD1 price control mechanism in 2021
4. Bring added value to the Warm Home Discount Industry Initiatives (WHD II) scheme by **evidencing wider health-impacts** achieved through the provision of first-time gas central heating systems in off-gas areas and the delivery of holistic energy advice

Deciding who to help: The report begins by setting out why and how the research targeted certain households, and explains how the eligibility criteria were designed using evidence from existing studies into the links between cold-related ill health, fuel poverty, and public health interventions.

The difference made: It then assesses the impact that the application of said targeting and eligibility criteria to the provision of free gas grid connections, free gas heating systems and free energy efficiency advice had on the fuel poverty and cold-related ill health risk of participant households, as well as identifying any wider social and financial benefits of such support.

Developing replicable support pathways: The report moves on to identify lessons learned during the delivery of the scheme to provide practical insight into how successful support pathways were developed, and the challenges involved.

Recommendations for policymakers and delivery organisations: Finally, the report ends by setting out a series of practical and policy-based recommendations for policy makers, commissioning and delivery bodies and frontline organisations, to enable the provision of energy efficiency support with the aim of alleviating fuel poverty and reducing cold-related health inequalities.

1 NICE, 2015: *Excess Winter Deaths and Illness and the Health Risks Associated with Cold Homes*. Available www.nice.org.uk/guidance.ng6 [accessed 1 May 2019]

Project partners

National Energy Action (NEA)

NEA is the national fuel poverty charity working across Great Britain to ensure that everyone can affordably access the energy needed for comfort and wellbeing at home. NEA led on the research and was responsible for the identification and recruitment of eligible households into the project. This was done through a combination of targeted mail-outs using intelligence provided through evidence-based mapping activities, as well as area-based face-to-face recruitment. NEA worked with households to guide them through the various stages of the project, including the provision of a gas grid connection, gas meter installation, heating measures installation, and post-installation advice and support. NEA also led the work to assess the impact of the support provided.

Northern Gas Networks (NGN)

NGN are a Gas Distribution Network operating in the North of England (covering the North East, Northern Cumbria and much of Yorkshire). They transport gas to 2,700,000 customers. NGN commissioned the research element of the Connecting Homes for Health Project and were responsible for providing gas grid connections to participant households (funding for gas central heating measures and energy efficiency advice was provided through Warm Home Discount Industry Initiatives).

YES Energy Solutions

YES is a Community Interest Company who, as part of their work, help households to reduce fuel bills and save energy by providing energy efficiency services. YES were responsible for the installation of gas central heating systems in properties participating in the project.

NEA
Action for Warm Homes

Northern Gas Networks

YES energy solutions

Deciding who to help

This section sets out why the research targeted certain households and describes how a bespoke mapping exercise was designed in order to contain the pilot to areas demonstrating multiple and overlapping risks of deprivation, fuel poverty and cold-related ill health. It describes the eligibility criteria developed and explains how they were designed using evidence from existing studies into the links between cold homes and ill health, fuel poverty, and public health interventions to address health inequalities. Finally, it describes the methods used to test and measure the impact of the support provided on the fuel poverty risk and health and wellbeing of participant households.

Why target certain households?

Cold and damp housing conditions impact upon both excess winter mortality and morbidity[2]. They are associated with the experience of cardio-respiratory disease amongst children and the elderly, and amongst those who are already suffering from chronic conditions. They are also associated with mobility issues and falls risks, mental ill health, and a reduced ability to manage existing illness. Survival strategies employed by households trying to cope with cold homes and high energy costs (such as going without food or other essentials) can have further knock-on effects for health and wellbeing, beyond that of the immediate physiological or psychosocial responses to the cold. The evidence base to date suggests that living in a warm home heated to recommended temperature thresholds might act to mitigate an individual's susceptibility to cardiovascular disease, ease the symptoms of respiratory illness, reduce the risk of falls, improve mental ill health, and reduce social isolation.

Cold-related mortality and morbidity are, however, widely spread across the general population. This means that there is no statistically significant socio-economic gradient with regards to who suffers from health conditions that can be linked to cold homes.[3] [4] Whilst actions to tackle cold homes should therefore be spread across society, the concept of proportionate universalism put forward by Marmot argues that actions to tackle health inequalities do need to be proportionate to the level of disadvantage experienced by different groups in society. This recognises that the most vulnerable and deprived will need additional support when it comes to preventing ill health and reducing health inequalities.[5]

For the Connecting Homes for Health pilot, this meant it was more relevant to capture significant health outcomes within particular groups of vulnerable households rather than measuring how far the effects of heating improvements were manifested at a general population level. A mapping exercise was therefore designed and carried out for County Durham and Sunderland, intended to contain the pilot to an area in which the majority of households were low income, likely to be in or at risk of fuel poverty, living in energy inefficient housing and at risk of multiple, cold-related ill health conditions.

2 *Connecting Homes for Health Phase 1 Review* outlines in detail the relationship between cold homes and ill health. The review finds that households which are off the gas grid are some of the coldest and most energy inefficient in the UK, as well as some of the most expensive to heat. Available at www.nea.org.uk/wp-content/uploads/2017/03/Connecting-Homes-for-Health-Phase-1-Review.pdf

3 *Evidence Review & Economic Analysis of Excess Winter Deaths for the National Institute for Health and Care Excellence (NICE). Review 1: Factors determining vulnerability to winter- and cold-related mortality/morbidity*. London School of Hygiene & Tropical Medicine, Public Health England, University College London

4 Friends of the Earth and Marmot Review Team, 2011, *The Health Impacts of Cold Homes and Fuel Poverty*. Available at: www.foe.co.uk/sites/default/files/downloads/cold_homes_health.pdf [Accessed 06/03/2017]

5 The Marmot Review (2010) *Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England Post-2010* (page 16)

The mapping involved identifying GP practices within the two local authority areas that were showing high prevalence of multiple cold-related health indicators according to the Quality Outcomes Framework (QOF). Areas were given weighted rankings according to prevalence levels of cold-related morbidity across a number of metrics (like COPD, asthma, cardiovascular disease, stroke). These were then overlapped with the Index of Multiple Deprivation (IMD) rank (along with additional deprivation indicators) and fuel poverty prevalence at Ward level in order to give each GP practice catchment area an overall health/deprivation/fuel poverty risk score. Postcodes falling within a 2-mile radius of each of the highest scoring practices were identified and given to NGN, who carried out an additional layer of mapping to identify which properties were off-gas.[6]

Developing the eligibility criteria

Applying the concept of proportionate universalism to Connecting Homes for Health meant that the eligibility criteria used needed to ensure that help was targeted at those who are the most vulnerable in society and who are least able to independently achieve affordable warmth at home. At the same time, restricting eligibility criteria too narrowly would mean that others who were still likely to be extremely vulnerable (but who were on or just above a given eligibility threshold) might be forced to suffer from cold-related ill health without adequate support being provided. The pilot therefore needed to balance narrower eligibility requirements (to capture the most vulnerable), whilst allowing for some flexibility (to capture other households in need). In the first phase of the project, a comprehensive desk-based evidence review[7] was carried out to understand the relationship between cold homes and ill health and to identify key characteristics that would enhance a household's vulnerability to both cold-related ill health and fuel poverty. Findings from the review were used to inform and develop the eligibility criteria for the scheme.

To be eligible for the Connecting Homes for Health pilot, households needed to:

- Have a net income of less than £21,000 (excluding income from Disability Living Allowance or Carers Allowance, for example). This was judged on a case-by-case basis to enable older, sick or vulnerable residents who were slightly above the threshold to receive support where they would otherwise have remained without an adequate heating system
- Have someone living in the home who has a health condition that can be linked with living in a cold home. A small number of households where no specific health conditions were present, but a household member was extremely vulnerable to the health impacts of living in a cold home, were accepted onto the project to prevent future ill health occurring (e.g. there was a new-born baby living in a home with no heating or hot water)
- Have personal savings of no more than £12,000 (allowing for £3,000 funeral costs). Again, this was judged on a case-by-case basis to enable older, sick or vulnerable residents who were slightly above the threshold to receive support where they would otherwise have remained without an adequate heating system.

6 The processes of mapping for County Durham and Sunderland were different in that one was carried out to pre-emptively identify areas for targeting before delivery began (County Durham), whilst the other was carried out retrospectively to confirm that a suggested area of expansion for the scheme during the delivery phase (into a particular estate in Sunderland) conformed to our targeting priorities (which it did).

7 Available at: www.nea.org.uk/wp- content/uploads/2017/03/Connecting-Homes-for-Health-Phase-1-Review.pdf

- Live within a designated postcode area within County Durham and Sunderland identified via the targeted mapping exercise[8]
- Not have a gas central heating system in the property

In total, 104 households participated the project.

Testing the impact of the pilot on fuel poverty and cold-related ill health

Households recruited into the project[9] were issued with a paper-based, semi-structured questionnaire (with the option to complete over the phone or in person where appropriate) at three intervals: before their intervention took place, 1-3 months after having their measures installed, and again after 9-12 months had passed. The questionnaires looked to identify whether (and if so, why) participants had experienced changes to thermal comfort and heating and hot water management at home, as well as changes to energy affordability. They explored changes to the experience of subjective fuel poverty as well as examining self-reported changes to physical and mental health and wellbeing. They also looked to understand participant satisfaction with the scheme overall.

In total, 104 responses were received to the pre-intervention questionnaire; 67 responses were received for the 1-3 month follow-up (representing a 64% response rate) and 43 were received for the 9-12 month follow-up (41% response rate). Responses were inputted into the statistical analysis software package SPSS and basic frequencies produced.

Following each survey round, a series of in-depth qualitative telephone interviews were carried out with a sub-set of participants to explore their experiences in more detail. Before intervention, 17 qualitative interviews were carried out. A further 20 were carried out after intervention (10 at the 1-3 month follow-up stage and 10 at the 9-12 month follow-up stage). Interviews lasted for up to an hour. Finally, a 2 hour focus group was held with 5 members of the delivery team at the end of the delivery phase of the project in order to understand the challenges involved in the provision of gas grid connections and measures- and advice-based energy efficiency support to vulnerable households, and to identify examples of best practice. All interviews and focus groups were audio-recorded and professionally transcribed. Transcripts were thematically coded and analysed using qualitative analysis software NVivo.

8 As the project continued, we were obliged to accept referrals from outside these identified catchment areas in order to meet delivery requirements within a delimited funding timeframe. However, this was only done once the minimum target number of households had been recruited into the project from both Durham and Sunderland (i.e. more than 80 participants formed part of the core sample).

9 Both the delivery and research phases of the project were completed in 2020, before the outbreak of the global COVID-19 pandemic.

The difference made: results from the pilot

This section begins by examining the characteristics displayed by households recruited into the project to assess how far they displayed existing vulnerability to fuel poverty and cold-related ill health before they received support. It then moves on to explore whether and what impact the project had on the experience of subjective fuel poverty amongst scheme participants, and how far they were satisfied with their new gas central heating system. It also examines how far households' access to, and management of, hot water changed post-intervention. The section looks to understand how far the intervention impacted upon the affordability of participants' energy and other household bills, and whether it affected the likelihood that the rationing of essentials or the practice of harmful coping mechanisms would occur.

Also examined is how far participants had experienced changes to their physical and mental health following their participation in the scheme. The section explores how households perceived their physical and mental and their ability to cope with existing illness before and after intervention, and assesses the extent to which households linked changes to their health or ability to cope with illness and/or disability with the support that they had received. Finally, this section examines overall satisfaction with the scheme amongst participants, including looking at their journey through the scheme, installation experience, the quality of works installed and the support that they received both before and after their new heating systems were installed.

This section concludes by summarising the difference made to households overall and assessing the extent to which the pilot was successful in impacting upon the fuel poverty risk of participants, as well as alleviating their experience of cold-related ill health.

Steve

Steve is a disabled war veteran. He suffers from PTSD. He lives alone with his dog, Baxter, whom he considers to be his closest friend in the world.

Steve had been obliged to leave his job as a result of his worsening health: his income was drastically reduced, he had fallen into arrears with his mortgage payments and there was a strong chance that his home could be repossessed. He was in dispute with the Ministry of Defence (MoD) over the calculation of his war pension, and he was living on Universal Credit. He could not afford to pay his energy bills, especially in light of his expensive and inefficient heating system: one storage heater in the living room and two portable electric heaters. He therefore generally found himself sitting in the dark and cold at home: he would wear a pair of leather gloves to try and keep his hands warm, but that wasn't enough to prevent the pain creeping into his joints and causing him great discomfort. However, he preferred to suffer the pain in his hands than to risk falling further into fuel debt with his energy supplier. During his dispute with the MoD, his Universal Credit payments were temporarily stopped. He had no food in the house, only dog food. For days he did not eat but drank only water. Steve felt incredibly ashamed of the circumstances in which he found himself and had progressively cut off contact with friends and family as a result. He did not want them to see him struggling and was too proud to stomach the thought of their pity or their offers to help. Feeling cold, hungry and isolated made it harder for him to cope with the symptoms of his PTSD. The only person he ever really saw was his dad, who was suffering from a terminal illness and lived nearby.

Steve's participation in the Connecting Homes for Health scheme was somewhat serendipitous. Normally, he did not answer the front door to anyone unless he was expecting them. The day the NEA advisor knocked, he thought it was the postman asking if he could accept a parcel for his neighbour. He opened the door, Baxter pushed forward and jumped in a friendly manner to greet the advisor. However, Baxter was such a large dog that in doing so, he managed to knock her off her feet and she fell over. Steve felt so bad about this that he invited her into the property to make sure that she was OK – he later said that if that hadn't happened, he would have turned her away and refused to hear about the scheme. However, after speaking with the advisor and letting her into his home, Steve took the decision to say 'yes', and signed up for the project.

One year later, Steve is transformed. He is now able to heat every room in his house and maintain a comfortable temperature throughout. He now has an efficient and fully working heating and hot water system and knows that he can stay warm when he needs it. Despite using his heating system more, his energy costs have reduced so much that he now is able to save money each month. As a result, he has £500 in his savings account. He can afford to buy the food he wants – not just the bare minimum of food that he needs. He has even had help in securing a manageable repayment plan with his energy supplier and is gradually clearing the fuel debt that he accrued before signing up to the scheme. His leather gloves are no longer needed when he is at home: his hands do not hurt anymore, and he can take regular hot baths to further help manage his joint pain. He feels financially independent, and happy. Because he no longer feels hungry and cold, he feels as though he is in better place mentally to be able to deal with the symptoms of his PTSD. His voice now sounds bright and upbeat whereas, before, he sounded sad and forlorn, and was prone to tears. He even felt confident enough to call his water supplier and challenge a bill which he deemed to be too high: in the process he discovered a water leak, was able to fix this himself and get the high bill written off by his water company. He says that letting the NEA advisor into his home that day was the best thing that he has ever done. The scheme, he says, has transformed his life: it has given him his health and financial independence back, and given him hope once again.

Sample characteristics

This section examines the fuel poverty and cold-related ill health risk[10] amongst scheme participants prior to receiving support, based on their household characteristics. This involves looking at: household size and composition; household income and benefits received; the nature of health conditions present in a household; and the fuel type used to heat the property. These characteristics are examined in order to assess how far the eligibility criteria set at the outset of the research were met by the sample.

Household size and composition

The presence of one or more dependent children in a home can represent an increased risk of fuel poverty (43.5% of all fuel-poor households in 2018). Of couples with dependent children nationally, 14.1% are in fuel poverty and single parent households have a fuel poverty prevalence of 18.9%. Couples that are aged over 60 have the largest fuel poverty gap (£393), meaning they are vulnerable to a greater depth of fuel poverty.[11] Both children and older person households are also likely to face increased vulnerability to cold-related ill health.

As we can see from Chart 1, the majority of scheme participants were either one- (42.9%) or two- (43.9) person households. Fewer had three (6.1%), four (6.1%) or seven (1%) people living in the home. In 21.4% of households, the youngest person was under 5 years of age (see Chart 2). In 19%, the age of the oldest person was between 61 and 65 years. The age of the oldest person in the household ranged from 21 to 25 years (1%) to 86-90 years (4%). The age of the youngest person in the household ranged from under 5 years (21.4%) to 81-85 years (4.3%) (Chart 2).

This suggests that, based on household size and composition, participants displayed increased vulnerability to fuel poverty and/or cold-related ill health due to a tendency towards younger person households with children (greater frequency of fuel poverty), and older person households (risk of greater depth of fuel poverty).

10 Fuel poverty occurs when a household is unable to afford their required energy costs for adequate health and wellbeing. The term normally refers to a household's inability to heat their home, though can includes other uses of energy such as hot water and lighting. It results from the interplay of poor, energy inefficient housing, high energy prices and low incomes. Particular groups with sensitive or immature thermoregulatory systems, and who are more likely to spend extended time at home, such as the elderly and young children, may be at particular risk of suffering from the health effects of cold homes. This also includes those with underlying and chronic illness, especially cardiorespiratory disease.
11 BEIS, Annual Fuel Poverty Statistics Report (2020, 2018 data)

Chart 1: Household size

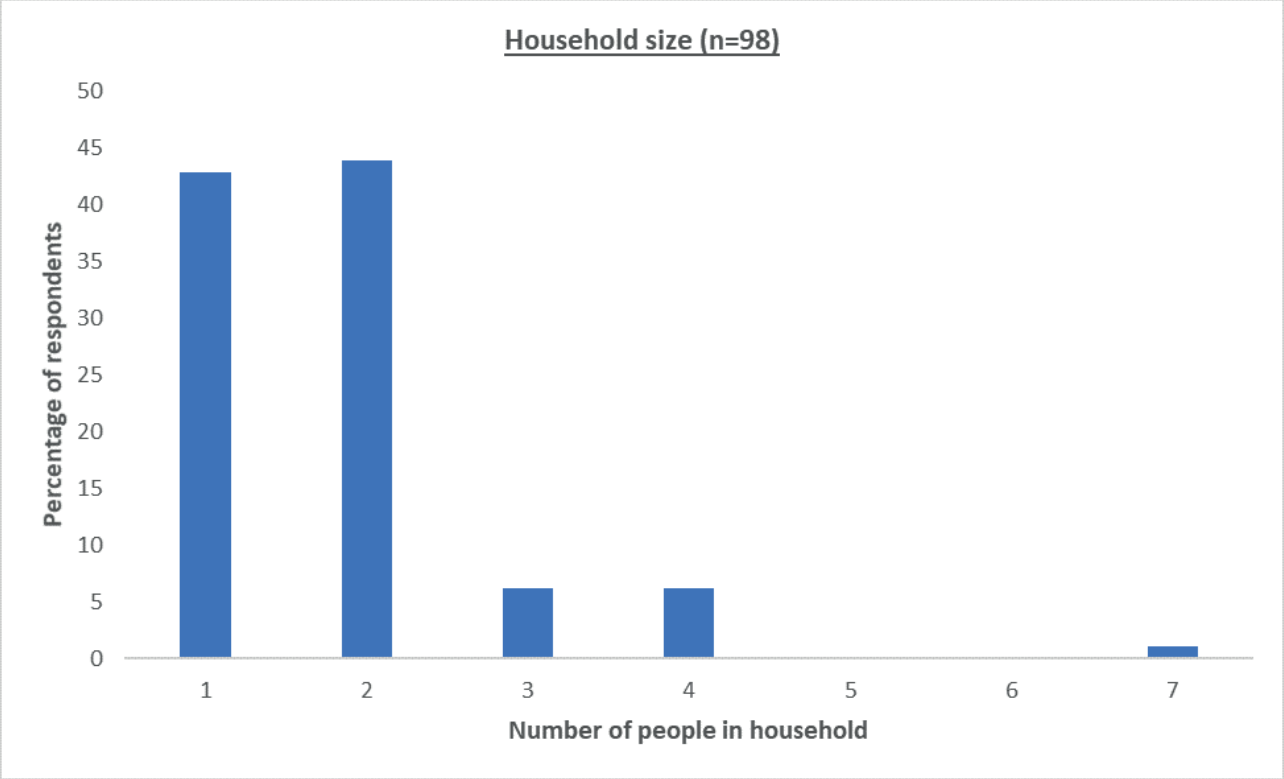
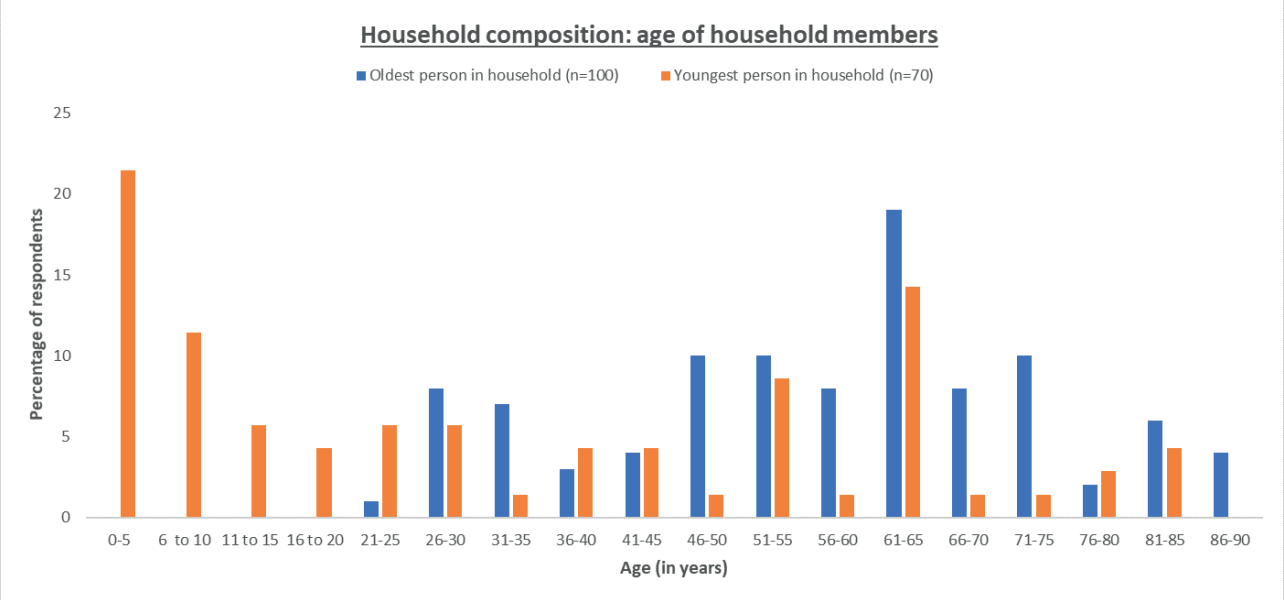


Chart 2: Age of household members



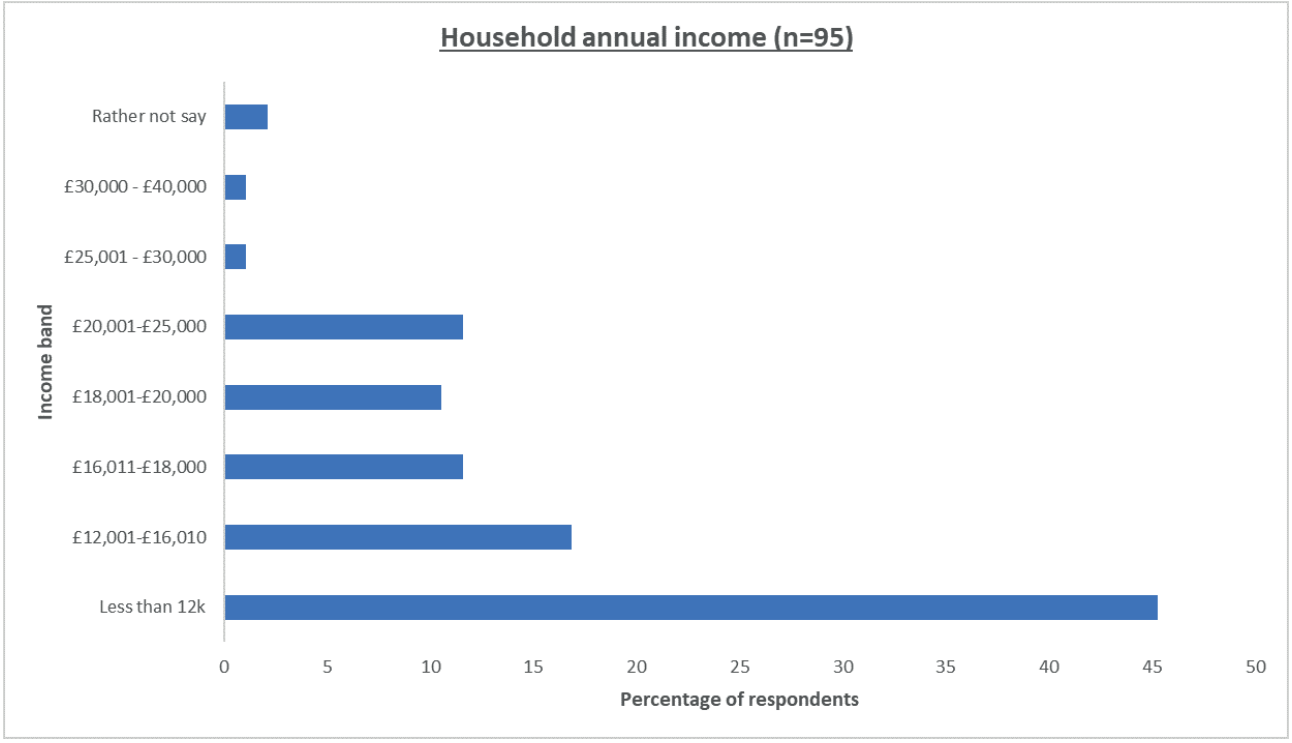
Household income

Targeting of fuel-poverty related support often relies on receipt of means-tested benefits as a proxy for low income. However, such an approach to targeting can both overlook those who would be entitled to benefits but do not claim them, and the working poor not entitled to benefits such as tax credits or Universal Credit. Some benefits themselves can also increase the vulnerability and reduce the financial resilience of families, which has become apparent amongst recipients of Universal Credit (UC) in the UK.[12]

Almost half of the households recruited into the project had an annual income of less than £12,000 (45.3%) (Chart 3). Meanwhile, 16.8% had an annual income of between £12,001 and £16,010, and an additional 22.1% had an income of between £16,011 and £20,000. The most commonly received benefits were Disability Living Allowance (25.7%), income-related employment and support allowance (25.7%) and Universal Credit (17.8%) (Chart 4). Around a quarter (25.7%) of households were not in receipt of any benefits.

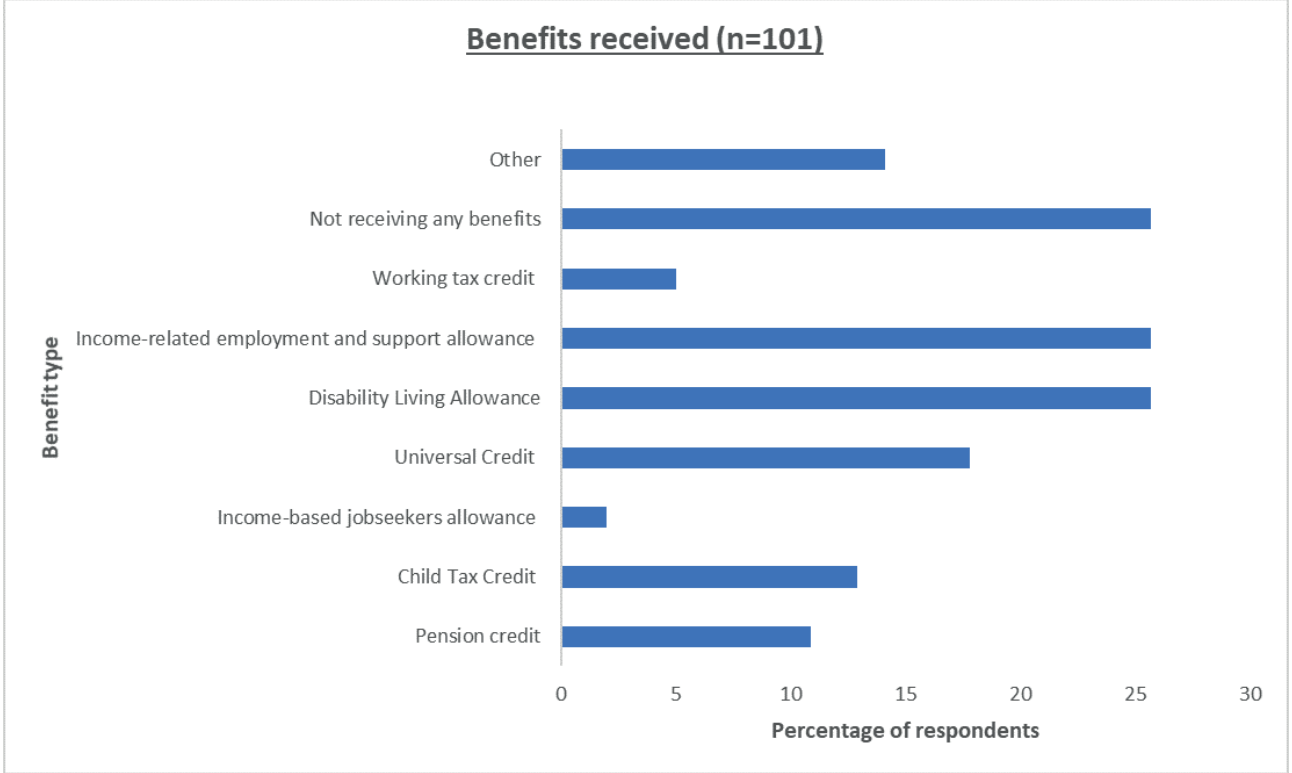
Of households living in fuel poverty nationally, 39.1% are in the lowest income decile and 38.1% are in the second lowest decile[13]. This suggests that, based on income characteristics alone, the households within the sample demonstrated an increased risk of being in fuel poverty.

Chart 3: Household annual income



12 See, for example, Policy in Practice and JRF (2019) *Financial Resilience and the Transition to Universal Credit*. Available at: http://policyinpractice.co.uk/wp-content/uploads/Universal-Credit-and-Financial-Resilience-JRF-Summary-report.pdf
13 BEIS, *Annual Fuel Poverty Statistics Report* (2020, 2018 data)

Chart 4: Benefits received



Health conditions

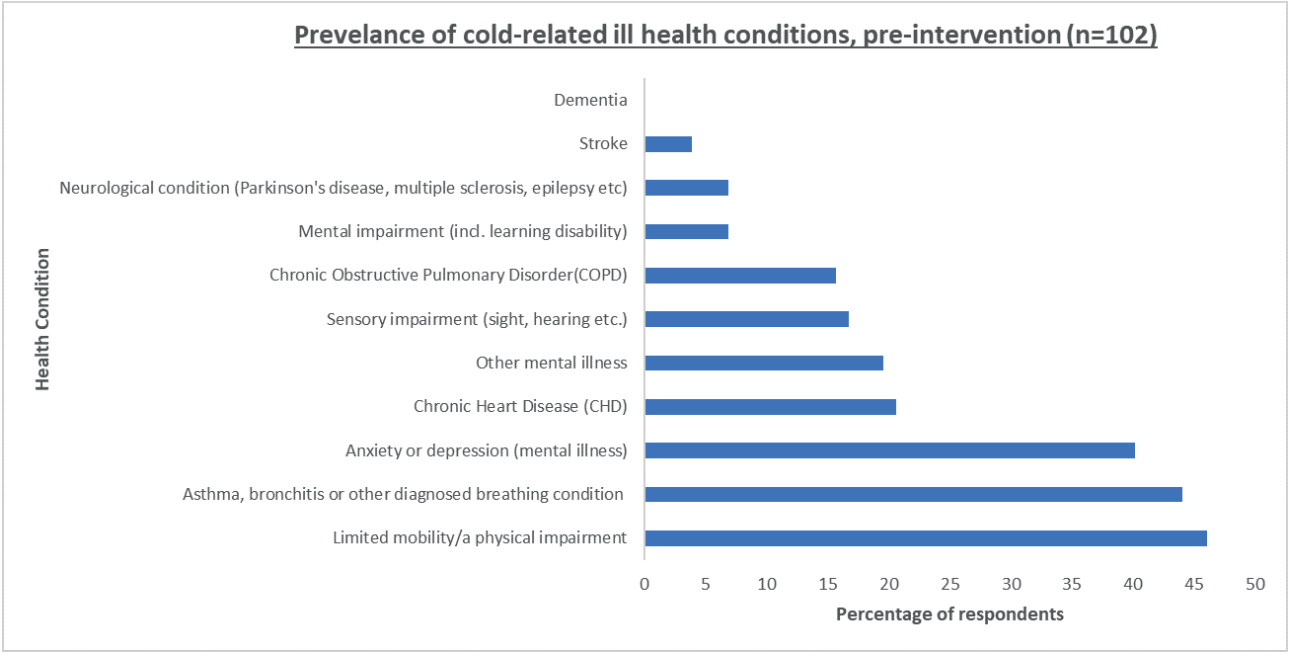
When it comes to health, 11.7% of households in England with a long-term illness or disability are in fuel poverty, and this accounts for two fifths of all fuel-poor households (40.3%)[14]. Research studies to date have identified a link between cold temperatures at home and excess winter morbidity and mortality, and those with sensitive or immature thermoregulatory systems or who are likely to spend more time at home (e.g. the elderly and young children) can face an increased risk of suffering from cold-related ill health. This also includes those with underlying and chronic illnesses, especially cardiorespiratory disease.

The most prevalent health conditions amongst participating households were limited mobility or physical impairments (46.1%) and asthma, bronchitis, or other diagnosed breathing conditions (44.1%) (Chart 5). Two fifths (40.2%) suffered from anxiety or depression, and a fifth (20.6%) had Chronic Heart Disease (CHD). Others had sensory impairments (16.7%), Chronic Obstructive Pulmonary Disorder (COPD) (15.7%) or other mental illness (19.6%). A smaller proportion of households suffered from neurological conditions (6.9%), mental impairment (including learning disability) (6.9%) and stroke (3.9%). There was often more than health condition present in each household.

This suggests that households within the sample displayed a high risk of suffering from cold-related ill health. Furthermore, having a long-term health condition or disability could have important ramifications for a household's ability to achieve affordable warmth due to higher energy demand and/or lower incomes from an inability to undertake paid work, thus influencing fuel poverty risk.

14 BEIS, Annual Fuel Poverty Statistics Report (2020, 2018 data)

Chart 5: Health conditions present in household

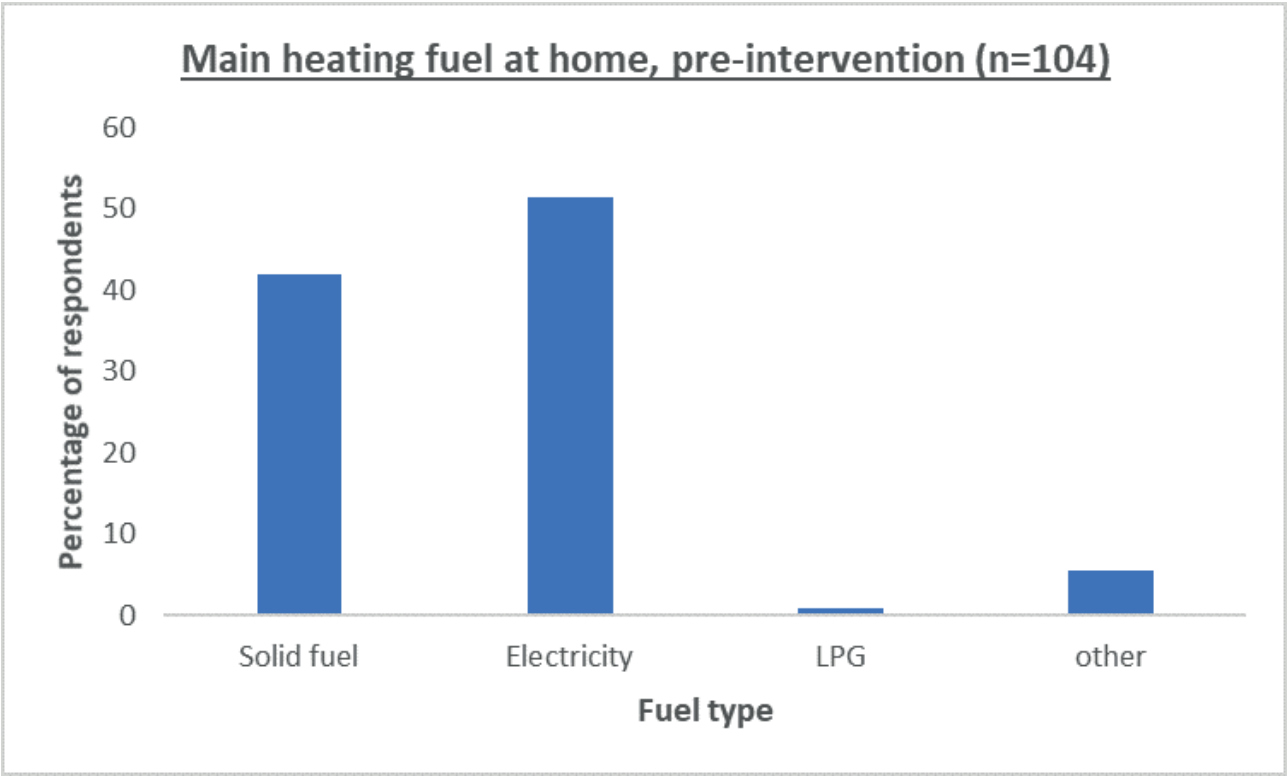


Heating fuel

Of households recruited into the project, 41.9% had solid fuel heating systems at home prior to intervention, whilst 51.4% had electric systems and 1% used LPG 9 (Chart 6). Only 4.9% of households, however, were in receipt of a coal or equivalent cash allowance under the National Concessionary Fuel Scheme.

Participants tended to represent a real mix of people and heating experiences. In County Durham, many elderly households had had solid fuel systems for years and, in some cases, considered them to be part of their cultural and social history. Whilst they loved how such systems looked and the kind of heat they got from them, they could no longer cope with the physical requirements of such a system (sourcing and carrying fuel, cleaning out fireplaces, breathing in smoke or fumes, etc.). Others, meanwhile, were on such low incomes or had health needs with such high heating requirements that they simply could not afford to run their system – they were either freezing at home or slowing slipping into debt. Meanwhile, in Sunderland, private tenants relying on old and inefficient electric storage heaters were living without any adequate kind of heating or hot water system in their home, struggling to meet the cost of the energy they used and to top-up their pre-payment meters (PPMs).

Chart 6: Main heating fuel at home, pre-intervention



Across England, almost a fifth of all households with a solid fuel heating system are in fuel poverty (23.6%), and they face the largest fuel poverty gap of any heating type (£1,459 per year, compared to £260 for fuel-poor households with a gas central heating system). Similarly, almost a fifth of households that have electric central or storage heating are in fuel poverty (18.5%) and they have a fuel poverty gap of £451 per year)[15]. This suggests that, based on heating fuel type, households recruited into the project were likely to have faced an increased risk of being in fuel poverty.

Impact on subjective fuel poverty

This section looks at multiple aspects of home heating, control and comfort, both before and after households received support, as well as assessing whether and how far their ability to stay warm at home changed after participating in the scheme. As such, it looks at changes to the experience of subjective fuel poverty amongst participant households. This is a measure of fuel poverty which uses the subjective view of the household rather than the official definition, which relies on an energy audit of the dwelling to establish required running costs to meet a standard heating regime.

15 BEIS, Annual Fuel Poverty Statistics Report (2020, 2018 data)

Notes from the field, pre-intervention

Ms. L had fled an abusive relationship and had previously been living in a women's refuge. The sitting room was cold and very sparsely furnished with only a 2-seater sofa, a set of drawers and a small table. At the window was a large square of material in place of curtains which blocked out any light. There was a single electric storage heater in the sitting room, and it was not working. The lady was wearing several layers of clothing to keep her warm. She did not have a TV but said she would love both a TV and DVD player so that she could improve her English and get a job. She had some friends who spoke her language and attended the same church on a Sunday. Other than that, she rarely saw other people. Upstairs there were 2 bedrooms; Ms. L's room was at the front of the property and was a small box room with a single bed pushed right into the corner by the window. She explained via an interpreter that she chose this room to sleep in as this was the warmest room and she had been able to purchase a small electric heater to go on the wall. The wallpaper was made up of white backing paper attached with drawing pins. In the bathroom there was a plastic bucket in the bath in which clothes were being washed, and a plastic shower hose going into the bucket. There was laminate flooring throughout the property, which did not help much with regards to keeping it warm.

Home heating and control

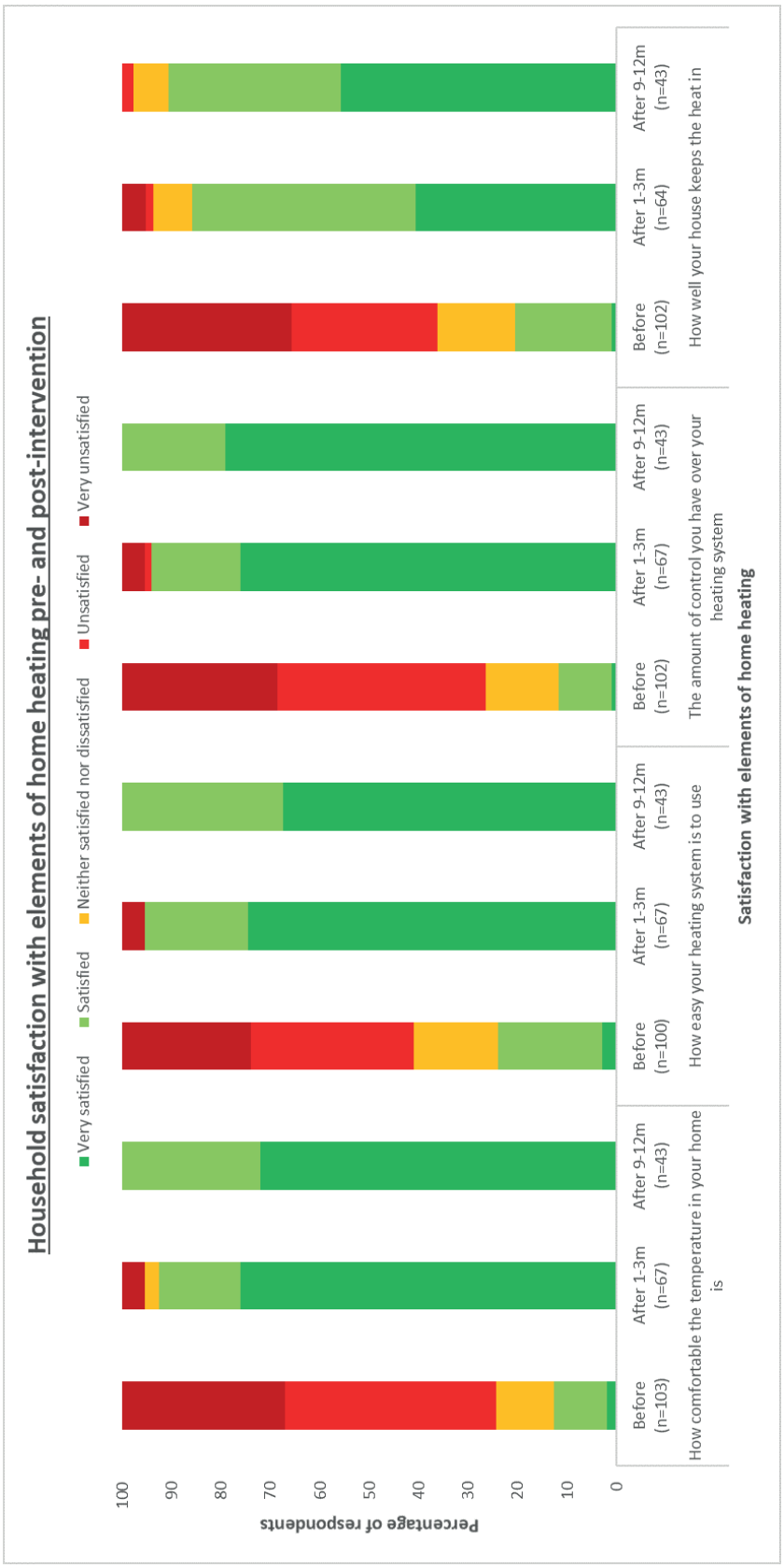
Before receiving support, 75.7% of participants were either unsatisfied or very unsatisfied with the temperature in their home, and over half (59%) were not satisfied with how easy their heating system was to use. Almost three quarters (73.6%) were either unsatisfied or very unsatisfied with the amount of control they had over their heating, and nearly two thirds (63.7%) were not satisfied with how well their house kept the heat in (Chart 7, page 19).

However, in the 1-3 months following the installation of their new gas central heating system, 92.5% of participants were now either satisfied or very satisfied with the temperature in their home, and this increased to 100% one year after. Similarly, 95.5% were now satisfied or very satisfied with how easy their heating system was to use 3 months after intervention, and this had increased to 100% within a year. With regards to how much control households now had over their heating, 94% were satisfied or very satisfied with this 3 months after receiving support, again increasing to 100% in the 9-12 months afterwards. Finally, following intervention, 85.9% of households were satisfied or very satisfied with how well their house kept the heat at the 3-month stage, increasing to 90.7% at the 12-month stage[16] (Chart 7, page 19).

These results indicate that the home heating and control experiences of participant households had dramatically transformed for the better following the support that they received, and that the positive benefits continued to accrue and endure well after the initial period following the installation.

16 The Connecting Homes for Health Scheme did not install any insulation measures as part of the support provided to households. It is therefore possible that this change is a result of the energy-related advice received or household perceptions of improved property thermal efficiency due to more effective heating systems. However, it is also possible that some households may have accessed additional insulation support following their participation in the scheme, though the evaluation was unable to monitor this.

Chart 7: Household satisfaction with multiple elements of home heating, pre- and post-intervention



LIVING WITH A SOLID FUEL OR ELECTRIC HEATING SYSTEM

Before receiving support, some people had had their solid fuel heating systems in place for 35 or 45 years, and others had had them for so long they could not remember a time without them. One participant, who had had a solid fuel system in for 38 years joked that, once the new system was in, he would ***"get the handle gold plated and put it on the mantlepiece"***. There was a sense amongst participants that their systems were ***"on their last legs."***

> *"Half the time I've got to sit with the fire guard up because there's so much stone in the coal. I mean, it actually burns my wooden floor and my 3-piece. The embers are hot, and they throw out like bullets. It's so dangerous now."*

Such systems came with their own safety concerns, and could be difficult to manage, with one participant describing how: ***"it's soul destroying, you know, the clean-up with all the dust. It's doing my head in. Sometimes you just give up and say, 'I've had enough of this'."*** At the same time, people became very attached to them, especially in terms of the aesthetic they offered: ***"It's a centrepiece to your room"***; ***"they look very nice"***; ***"they look tidy"***. For those with electric fires, the illusion of flames could also be very comforting. Others talked about the cultural significance of having a solid fuel system within a mining or ex-mining community. Here, solid fuel had become inextricably linked with local life and identity.

> *"You've got to make sure that it's not too windy because, if you open the back door to take the ash out, it blows back in the house and in your face. So, then you have to go in the shower, and then you got to do all the room and everything and do all the dusting again."*

Despite the histories of solid fuel systems and their intertwining with local cultural identities, there was a sense amongst participant households that the time for change had come. Worrying about what the future might hold for their loved ones meant they were starting to plan for how relatives might cope with their current system in the event of their death: ***"The wife, she couldn't manage to carry a bucket of coal in. If anything happened to me, she'd be in a right mess with herself."*** Such concerns were compounded by fears of suppliers 'out to make a swift buck', reducing the confidence households could feel in the fuel they were buying. Others felt that the time had come where they had to prioritise their own health needs.

> *"All my life, my dad worked at the pit, my husband worked at the pit. Part of your wages was your coal delivery. So, you just grew up with it. It's going to be a huge, huge change to us I think [moving on to gas]."*

Participants often noted that their current systems were not as efficient as they would like, and this could limit the comfort felt in different spaces of the house. For some, the temperature in some rooms meant that they simply would not allow vulnerable family members to spend time there: ***"I've got a six month old [baby], and I can't put her in her room yet because it's just a bit too cold."*** Others noted that the poor efficiency of their systems meant they never felt warm anyway: ***"to be honest, it's never that warm that I have to worry about turning it off. I just pray that it turns on now and again. It really does not pump enough heat around to worry about turning it off."***

> *"I was ordering four bags and the coal wasn't lasting a week. So, I asked the neighbour to keep an eye out to see how many bags he was dropping in the bunker and lo and behold he was only leaving three instead of four, because I wasn't in the house."*

These experiences meant that some people had to resort to secondary heating appliances. For others, the fact that their properties did not hold the heat in well meant that they were at risk of being cold if they didn't carefully manage their heating system. Indeed, control was an issue that reflected itself in the daily routines that people had built around their heating or hot water systems: ***"The first thing you do when you get up is see to the fire. You rake the coke down and firelight a few sticks, chuck on some coke...that has to be done first, before you can do anything else."*** Some tried to improve manageability by keeping the fire going overnight, to make it easier to get faster heat on a morning; maintaining strict heating management regimes represented a significant burden to them. Having to make sure you planned your day around having access to fuel could be a problem, and often meant developing quite elaborate routines to manage access to fuel within the home.

> *"If I do sit in my bedroom, it's like cold water running down my back, even with the heating on."*

Intricate management of heating systems in the home was reflected in the time management and planning needed to make sure enough fuel was available when needed: ***"It takes a couple of days [for coal or wood] to be delivered. You have to make sure you've got it in advance."*** Sometimes, though, good management skills on the part of the householder were not enough to make sure they got the fuel they needed, when they needed it: ***"Sometimes the coalman wouldn't even come out. They weren't bothered you know. You did just as well to buy sticks and wood and logs."***

Others felt that they had no control at all. This often led to adaptive situations where people's use of the home was dictated by what their heating system allowed them to do: ***"if I want to work in a room I've got to put the radiator on 10 minutes beforehand or it will be like an icebox. So, I have to plan ahead for everything."***

> *"The system I have here is not doing me any good whatsoever at all. I do have a bad chest and put it down to this fire...we've got to move forward."*

Those using electric systems could also experience difficulties in managing their heating effectively. In the end, some just stopped trying to manage them: ***"well, I don't touch them. I just have them left on full and leave it at that."*** Another explained that ***"My eyesight is not very good, and I can't see which way you turn the knobs, so I just leave them alone."*** The nature of electric heat furthermore influenced the way in which people carried out everyday tasks, such as household chores: ***"it's drying the clothes. You've got to hang them all over the house because you cannot put them on the storage heaters, so it's like having them hang over the doors and hanging over the bannister and stuff like that."***

"It was so warm last week there were a couple of days when I turned the fire off. It took us nearly seven days to really get the room back to temperature after that. I'm sitting here now and I'm freezing. My hands are freezing."

"When my husband was alive, he just did everything...When he died, I can remember I was in front of the fire on my hands and knees and I was sitting crying because I couldn't I just could not get this fire lit. It took me about two hours in the end. At the time it was just horrific."

"If you don't [bring the coal in from outside] in the morning, you sit down, and you forget about it. Then, when you think 'oh it's getting a bit nippy' you realise it's raining, hailing, and you haven't got any coal... You've got to get your coat on and go out and fill two buckets and bring them in and then it's getting dark and you don't like to go out there in the dark and it's just like, for God's sake, why didn't I do this earlier? It does have an impact on your daily life."

"If you forget to put coke on the fire to keep it going overnight, you've got to spend half an hour the next day putting the fire back on and then waiting about another 45 minutes for the heat to heat the water. And if the weather is really bad there is nothing worse than going out in the snow and the cold to bring coke in to set the fire away again."

Notes from the field, pre-intervention

There was one woman whose boyfriend had used wooden pallets to make sort of 'wooden cladding' over one large wall in the kitchen. She was talking about how much warmer the kitchen was now, and how she had tried to make it Moroccan-themed by hanging drapes off the pallets. You just think, if people have to put wooden pallets on the wall to make it warmer, there's a problem somewhere isn't there? She said one of the hardest things was having to share baths, as there was never enough hot water. Sometimes, three people (the daughter, the mother, and the boyfriend) would have to use the same bathwater one after another. She didn't have anywhere to dry her clothes and had them hanging around the house - including over the staircase and directly over the storage heaters. She said she found the storage heaters very expensive to run.

LIVING WITH A GAS CENTRAL HEATING SYSTEM

After receiving support, participants described how their new heating system meant they could achieve a better level of warmth at home, when they needed it: ***"There are days when you think you wouldn't mind the heating on for an hour or so. But with the night storage heaters, well you just can't have that. Now, it's instantaneous. That's the difference. You know you are not paying to heat something for 24 hours and being unable to get the benefit of it."*** This came with improved control, allowing heating use to be tailored to individual need: ***"It was either too hot or too cold with the other system. It's a lot better now because you can turn it off when you want to."*** Others noted that they had swapped the burden of physically managing their old system for new controls: ***"With my husband not being very well, he can't do the fire and I can't bend because I've got a bad back. So, it's easy for us all ways round really. We just use the controls now and it's brilliant."***

> *"I've never been cold once this winter, whereas other winters, I have sat absolutely freezing; even though the fire was on, it doesn't bring the heat out like the gas does. It is fabulous. I love it. It is the best thing I ever did."*

People described how their homes had transformed from places where they had often felt cold and miserable, to places of comfort and warmth: ***"The house does feel more cosy, more comfortable, I think, with the heating in."*** As such, they would often describe their decision to participate in the scheme as one of the best decisions they had ever taken – indicating the extent to which they themselves viewed it as having had a drastic impact on their quality of life: ***"It's made a hell of a change. Before, I was cold, pretty much, all the time because I couldn't have the electric heating on very much, but now, with this gas heating, it's spot on. It's the best thing I ever done in my house."***

> *"I just feel I do more because I'm warm. When I was cold, I just used to sit here and not do a lot. I've got a craft room that I wouldn't work in. I would get my husband to bring bits into the lounge, which would make the lounge untidy. But, now, I can go and sit and work in my craft room because it's comfortable, it's warm, and I can keep my mess to one room."*

> *"We've opened the dining room. We don't eat on the settee like we used to before because that's where the fire was. Now we've got a dining room table and we eat at the table now... Really, the difference to the house is just fantastic...It makes so much difference just to be able to use the space we've got."*

Participants felt more liberated within their home, free of the chains of fleeces, blankets and shawls that were previously needed to stay warm, but which had kept them stationary: ***"I have a pile of fleeces that I used to sit and keep handy, so that when I got chilly, I could wrap them around my shoulders. I don't use them anymore and I really need to find a new home for them."*** People noted a change in the number of rooms they were now able to use because of improved thermal comfort across the property: ***"We might have to use all the house now. Before, we just used to use one little corner where we'd keep warm, but now it's just really great to be...we've found we're actually warm now."***

It meant households could use areas of the house that they had previously abandoned, such as a dining room. Not only did this increase the space available to them, but transformed everyday practices such as now being able to eat as a family at the dining table, rather than in front of the television with trays on knees. Some participants had seen alterations in how much they were able to do everyday activities like cooking, now that they were warmer in places like the kitchen. People could now occupy their home as they would want to, transforming properties from places of having to manage and adapt life to the tyranny of a heating system, to a home where they were freed from the restraints of feeling cold.

Improved thermal comfort had also been achieved for those participants with additional needs and learning difficulties. For example, one participant who had suffered a life-changing brain injury would now tell his sister (his carer), that his house was ***"lovely and warm now...it's nice and warm. The window isn't wet anymore."*** The participant was unable to control the heating by himself, and would not adjust any settings or controls, even to turn the heating on or off. However, project advisors were able to demonstrate the functionality of the system to his carer, who then took the time to draw diagrams that could help him to navigate the system where he could, and who would otherwise control and regulate the system herself to ensure his comfort whilst minimising the risk of overheating. Such experiences demonstrate of the importance of advisors being able to take the time to understand the needs and concerns of households and to adapt the format or nature of their support accordingly.

Often, people expressed a sense that their new gas central heating system had given them their home back, or given them a home in a place that was previously just 'a house': ***"It's lovely. It's a different house. It was like a dilapidated house when we came in. It was terrible. Now we've got the heat, the heating system, the radiators are all nice and it's decorated...it's a home."*** But feeling warmer and happier at home did not just impact upon how comfortable someone felt; indeed, interviews with participants revealed wider social benefits to having improved thermal comfort at home, with ramifications for education and learning as well as facilitating the potential for those with additional needs to fully participate in society. For example, one participant described how her daughter needed to be home-schooled as a result of her health conditions and disabilities. Before participating in the scheme, the need to ensure her daughter felt warm enough at home all day every day had resulted in 'astronomical' energy costs – an unwelcome pressure for a family trying to survive on a low income. By enabling the family to access affordable warmth, it also provided a healthy learning environment and allowed them to focus on education, not energy bills.

Households with chronic and severe health conditions often had no choice but to heat their homes constantly and to a high level: ***"we were spending about £60, £70 a week just to keep it [the heating] at a level where my daughter, because she has chronic bronchitis, chronic asthma, skin conditions, joint problems, wouldn't get a chill. It was horrendous the money we were going through."*** Whilst more efficient, reliable and controllable heating systems could reduce running costs and therefore enable a greater level of heat to be achieved for less money, the financial pressures that were created by previous systems could leave their mark in the form of fuel debt. Hence, it was essential to ensure such households had appropriate advice and support post-intervention to establish appropriate pay-back mechanisms or access to debt relief, in order for them to make the most of the cost-savings brought in by their new system: ***"Your scheme got it [the fuel debt] written off with the supplier. [The advisor] was very good. Excellent. It was just brilliant how she did it and helped because we were using such a lot because the [old] heating system wasn't maintained...[Now] it's at the level I can afford because you're not having to have it on full to get the house nicely warm."*** Such experiences speak to the inter-relationship between thermal comfort, system functionality and cost.

Keeping warm at home

Chart 8 shows that, before receiving support, 93.1% of households said that they could not normally keep their whole house comfortably warm in winter or when it was cold outside, indicating that the majority of participants were experiencing subjective fuel poverty. This occurred as a result of non-financial reasons (such as inefficient or broken heating systems and/or inefficient properties) for 29.7%, and as a result of cost for 14.9%. For almost half (48.5%), their subjective fuel poverty was caused by a combination of both financial and non-financial reasons (Chart 9).

Within the first three months following their intervention, over half of households (58.2%) now said that they could keep their whole house comfortably warm when it was cold, and two-fifths (40.3%) were not sure (they had not yet experienced a winter period with their new system). Within one year after their intervention, however, 95.1% of households said that they could now keep warm at home when it was cold, indicating that they had been lifted out of subjective fuel poverty (Chart 8). For the remaining 4.9% (2 households), the continued presence of subjective fuel poverty was linked with either non-financial reasons alone, such as property inefficiency, or non-financial reasons combined with cost issues (Chart 9).

These results suggest that the combination of receiving a free gas grid connection and gas central heating system, alongside dedicated support and tailored energy efficiency advice was successful in dramatically and significantly reducing the experience of subjective fuel poverty amongst vulnerable households suffering from cold-related ill health.

Chart 8: Subjective fuel poverty, pre- and post-intervention

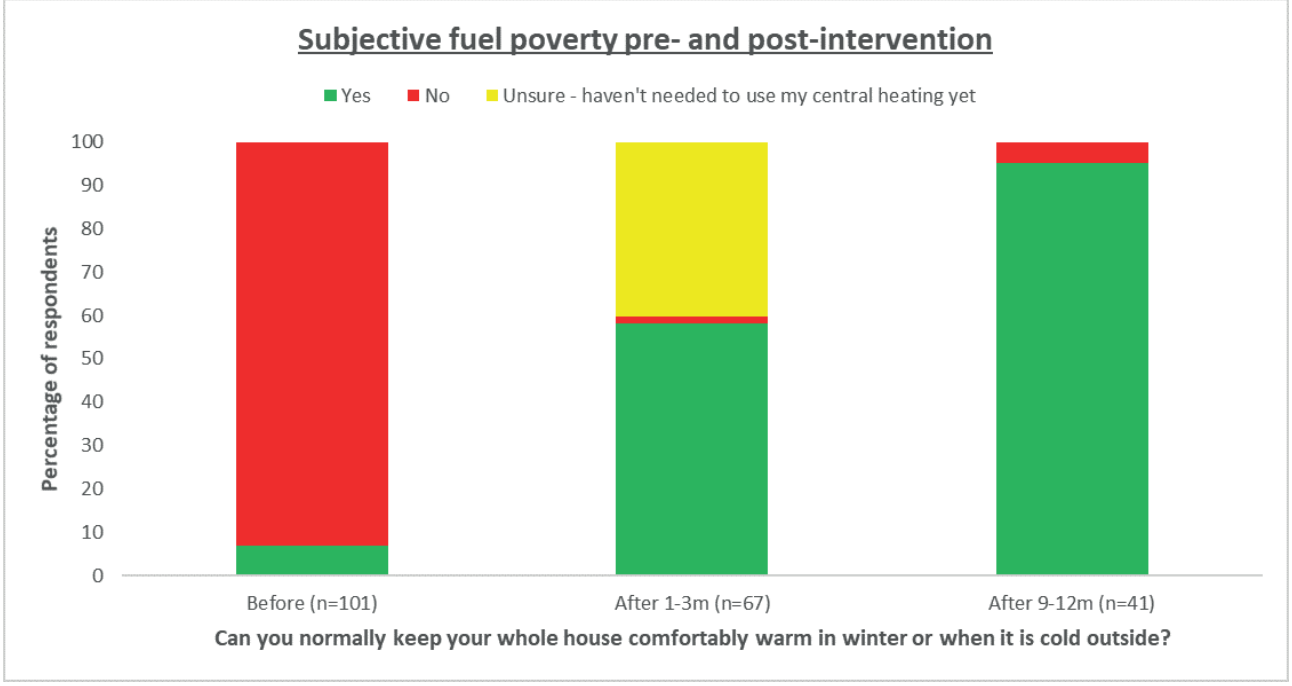
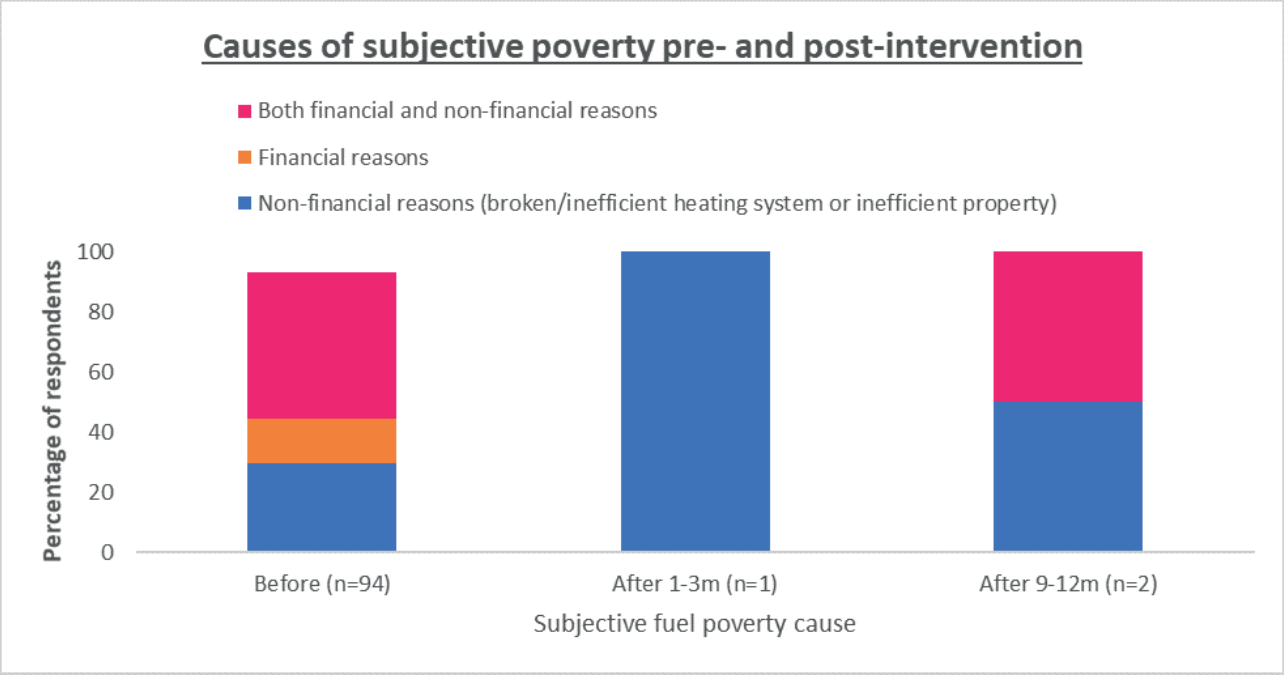


Chart 9: Causes of subjective fuel poverty, pre- and post-intervention



LIVING IN SUBJECTIVE FUEL POVERTY, PRE-INTERVENTION

The high energy costs experienced by participants before their participation in the scheme were often inextricably linked to the nature of their heating systems: ***"Unless it's kept burning 24/7, then you don't have hot water and you don't have heating in the rest of the house. And that's very pricy. But I don't keep it burning because I can't afford to."*** The inability to afford energy could leave people feeling freezing cold at home: ***"It's horrible. I haven't had it on for about a week now. When you get to a certain age and you're on benefits, you just can't afford these things. So, I sit wrapped in fleeces basically and I have done since before Christmas. It's a nightmare. That's why I'm desperate to get [central] heating."***

> *"About six years ago I was paying about £47 a month on my electric. Now I'm with a new supplier and it's £100 a month. And that's with me hardly having them [the heaters] on. I normally use a night storage heater downstairs, and I've got no heating upstairs."*

> *"With the coke you can't do anything to save money because you have to have your fire on. When the fire's off, your house is freezing. I've got to have my fire on even when I'm out. I've got to have my fire on overnight through the winter just so that I don't have to put the fire on the next day. So, I'm putting coke on before I go to bed, which is money that I'm spending and not feeling any benefit of it."*

Participants noted that the inefficiency of their old systems had meant they were practically unable to use them: ***"I had the storage heaters in. They were over 30 years old. I was charging them up, but I wasn't getting any heat out of them and it was costing a fortune. I had to stop using them."***

People described situations where they were facing mounting costs just to stay warm: ***"I do use the boost, especially when it's been cold. So, I have used quite a lot of money to be honest. Because I've been on maternity, I've used quite a lot of electric to the point where I've put on at least £70 a week. It's taken like £10 or £11 a day."*** They could find their attempts to save energy disrupted by the workings of a solid fuel or electric system, and some couldn't afford to leave the heating off due to the health needs of their family members. Neither, however, could they afford the cost of meeting those energy needs. Such families found themselves in an energy limbo of high cost, high need and limited ability to afford.

> *"The coke is getting very expensive now because my husband has been ill with cancer and he's lost a lot of weight. He's feeling the cold so very badly that I've had to take up the coke amount I'm buying every time. And it's costing me at least £48 a week, if not more, just to heat the house. When it gets really cold, of course, I have to get another bag. That works out at £60, nearly £70. And I just can't afford to do it."*

Notes from the field, pre-intervention

One older man was privately renting a flat where the landlord did not want to invest in improving the property. Even though the tenant was unemployed, he had used his own money to redecorate and have new doors fitted (to prevent draughts). The property was electrically heated but had only two Economy 7 radiators and two small, electric fires (one of each in the bedroom and one of each in the living room). There was rising damp in the entrance hall and bathroom which, given his mobility problems, the tenant struggled to tackle himself. The damp caused him to suffer a lot of distress. He was putting £75 a week onto his electricity meter, meaning he either went without elsewhere or relied on his adult children for support. The house was cold and dark, a situation which wasn't helped by the curtains being closed. This was to keep the draughts out. He was relieved when I said that we could talk to his landlord on his behalf, given that he had little faith in them himself. He welcomed the idea of having gas central heating, thinking that it might make the house warmer. He gestured at the storage heater exclaiming that it "can't be any more expensive than this."

BEING LIFTED OUT OF SUBJECTIVE FUEL POVERTY, POST-INTERVENTION

> *"The times I used to put [on Facebook] 'oh it's cold' or 'oh, it's bloody freezing'. I don't put that anymore on Facebook, no one sees that anymore. The change it has made. People have commented, when they've visited us. My sister used to visit us prior to having the heating, and she said it was cold. She would sit there, and she'd have a fleece and wrap it around her. But, she's visited since and she's said, you cannot believe the difference it's made."*

After their new gas central heating systems were installed, households described the transformations that had occurred in their ability to achieve adequate warmth at home. One survey respondent told us that: ***"It [the house] had rising damp and it is [now] drying all up, no damp in passage no more. No more in sitting room. It used to be freezing in my house now it is as warm as toast."*** Meanwhile, interview respondents described dramatic changes that they had seen to their energy bills following the installation of their new heating system. ***"It's constantly warm and it's saving us money. Quite a lot of money."***

One participant explained how the new system meant she could now be warm throughout her home, which made dealing with her illness easier. Others emphasised that their home was now a place of comfort and warmth, and that their home had been transformed not only for themselves, but for visiting friends and family members (who now felt at-ease and welcome). As such, people could now feel more connected to family and friends, able to focus on other things when they visited, rather than being ashamed of how cold and unwelcoming their homes were. Getting out of bed was no longer a dreaded ordeal for some, now that they knew they would have a warm and comfortable start to the day.

> *"It's 100% better, it really is...Our bedroom is vital to me, because I need to be warm in bed because of my aches and pains, and it wasn't always the warmest place to be. Now, I tend to get up early, take my little portable thermostat control with me and...I can switch it on upstairs, go back to bed for half an hour and then I know that when I wake up and get up the whole house is going to be warm for me to come down to, which is wonderful."*

Anne

Anne lives with her husband. She is unable to work due to disability and chronic respiratory illness, and her husband is close to retirement. They own their own home but have no savings.

They used to find it extremely difficult to make ends meet – especially when it came to juggling the price of solid fuel with the cost of food. Many a time, they would go hungry or spend a week eating only white rice. Sometimes, when they couldn't afford to buy fuel, her husband would chop up pieces of old furniture or search for rubbish that they could burn. It meant they risked breathing in potentially toxic fumes, but at least it kept the fire going. Even when they did have fuel, it was difficult to manage the fire and even to get it going on some days. Anne felt like she was living in the dark ages. Because she suffered from aches and pains in her joints regularly, it was important that she be able to stay warm when in bed. Often, this wasn't possible as the solid fuel system was simply not capable of sufficiently heating their full house.

She felt so cold at home that she would tend to just sit in the same seat in the living room, huddled in multiple fleeces and blankets, and would not move from there. She found it hard to summon the mental energy to get up and make a cup of tea or something to eat, or to even walk around. As a result, her joints would often stiffen up and cause her pain. She never wanted to spend time in the kitchen, because it was so cold. She already suffered from poor mental health, and feeling cold and immobile made her feel even more depressed. She enjoys doing crafts and making jewellery, and even has a craft room in the house. Before, however, she could not use the room because it was too cold. Her hands would freeze and stiffen, and she would be unable to use them to manipulate the craft materials she was working with. She would ask her husband to bring bits and pieces for her to work on from her chair in the living room, but this meant that their living space became untidy, and that she didn't have the space she needed to make the full range of crafts that she wanted. It also meant that she would be sitting, surrounded by boxes, which caused her to worry that she may trip or fall.

Anne loves to have her sister, who lives some distance away, to visit. However, her sister would rarely do so because she complained constantly about the cold in Anne's house, and declared that she simply could not spend an extended amount of time there.

Now, the whole house can be kept warm, and the heating is not limited to one room only. She can work from her craft room whenever she wants, and her hands no longer seize up when making her jewellery. She doesn't feel guilty for cluttering the living room with her tools and materials or worry about tripping over craft boxes that have been left there. She uses the thermostat and timer controls to manage the central heating, which ensures the bedroom is warm when she goes to bed and warm when she wakes up – she no longer dreads getting in or out of bed. She has found that she is spending more time in the kitchen and has started to experiment in trying to cook new things. In general, she is more able and willing to move around the house and to be more mobile. In turn, this has helped her to manage her disabilities and to ease the pain of stiff joints, as well as helping her to feel happier in herself. Both she and her husband have noticed a difference in their energy bills: their arrival is no longer feared and they are seen as something manageable. They now pay less than half the amount that they were paying for their solid fuel. Her sister even visits more regularly and stays for longer when she does – she cannot believe how warm the house is now. The decision to respond to the letter inviting them to participate in the scheme was, according to Anne, the best decision that she had ever made. The project, she feels, has changed the lives of her and her husband for the better.

Satisfaction with gas central heating

This section assesses how far participant households were satisfied with their new gas central heating system and identifies the reasons for this. Where participants said that they were unhappy with their new system, it examines the steps taken during project delivery to address their concerns and assesses how effective they were in adequately supporting households in adjusting to their new systems. It also explores how far households' access to hot water changed post-intervention and looks to identify any changes which had occurred in their water management practices.

Adjusting to a gas central heating system

From Chart 10 we can see that 1-3 months after the intervention, 94% of households were either satisfied or very satisfied with their new gas central heating system. However, 6% (4 participants) were either unsatisfied or very unsatisfied. This was due to cost (for 3 of them); control (for 2); level of heat (for 2) and cosmetic reasons (for 1) (Chart 12) – suggesting that those households were unsatisfied with more than one element of their new system.

Where households indicated dissatisfaction with their new heating system at the 1-3 month stage, the issue was flagged by the Research Team with NEA's advice team who re-visited to property to ensure households understood how to manage and/or control their new system and were on appropriate tariffs/payment methods, as well as looking to identify and remedy as far as possible any issues that may have arisen following the installation itself. By the time 9-12 months had passed, 100% of households were either satisfied or very satisfied with their new system (Chart 10).

Of participants who said that they were happy with their new system 9-12 months on, 61.9% were happy with how much the system cost to run, whilst 85.7% said that they were happy with how easy it was to control. A similar proportion (88.1%) were satisfied with the level of heat provided, and half were satisfied with how the system looked and/or its cleanliness (cosmetic reasons) (Chart 11).

These results suggest that some households took a little longer than others to adjust to their new heating systems but that, ultimately, participants were happy with their new systems across multiple indicators. They also underline the importance of follow-up advice provided at multiple intervals after an intervention in order to check how households are getting on, optimise performance through advice on things like heating controls, and maximise impact through advice on areas like tariffs.

Chart 10: Household satisfaction with new gas central heating system

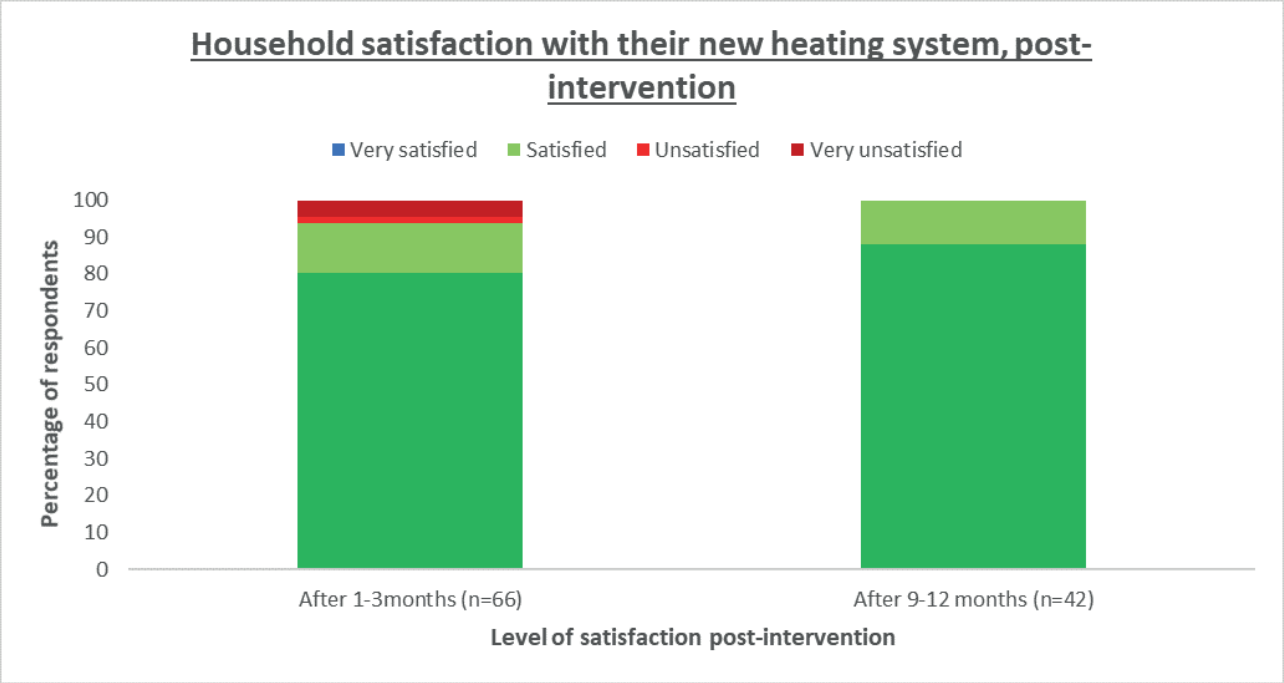


Chart 11: Reasons for satisfaction with new gas central heating system

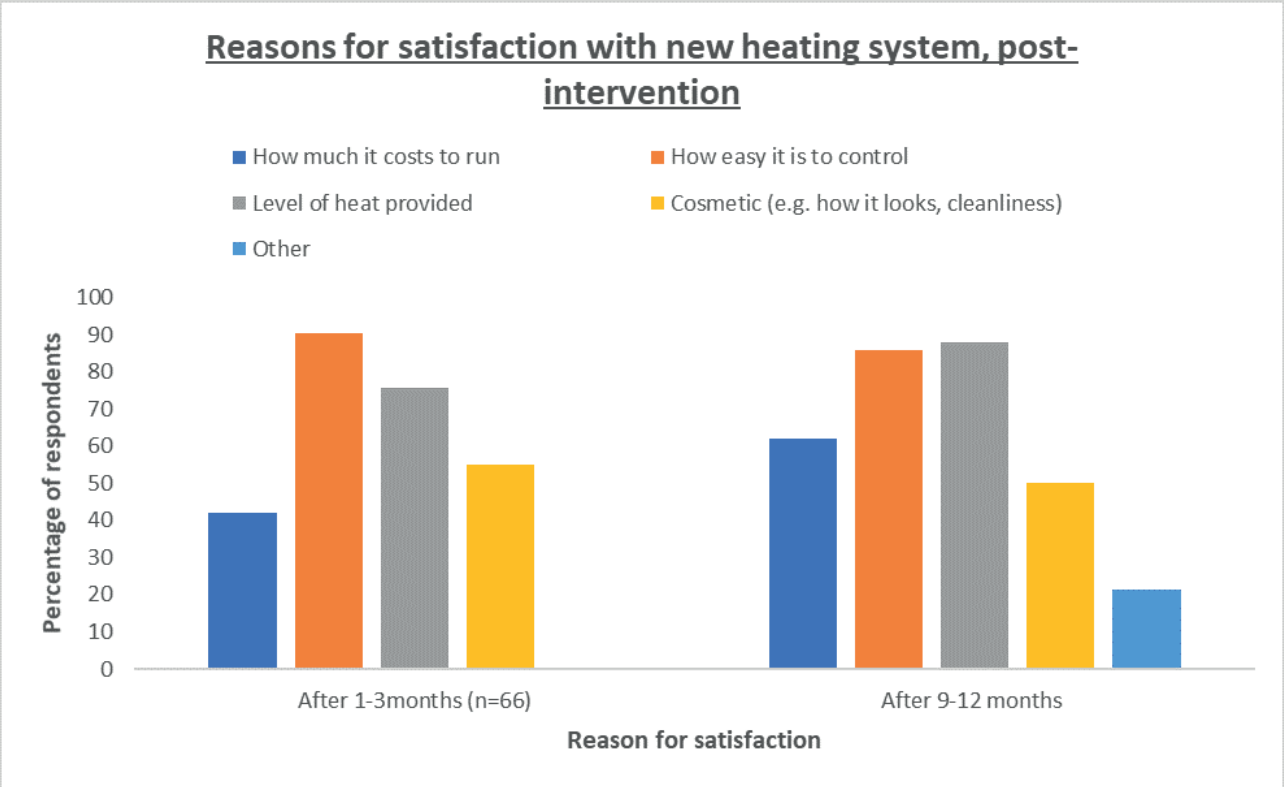
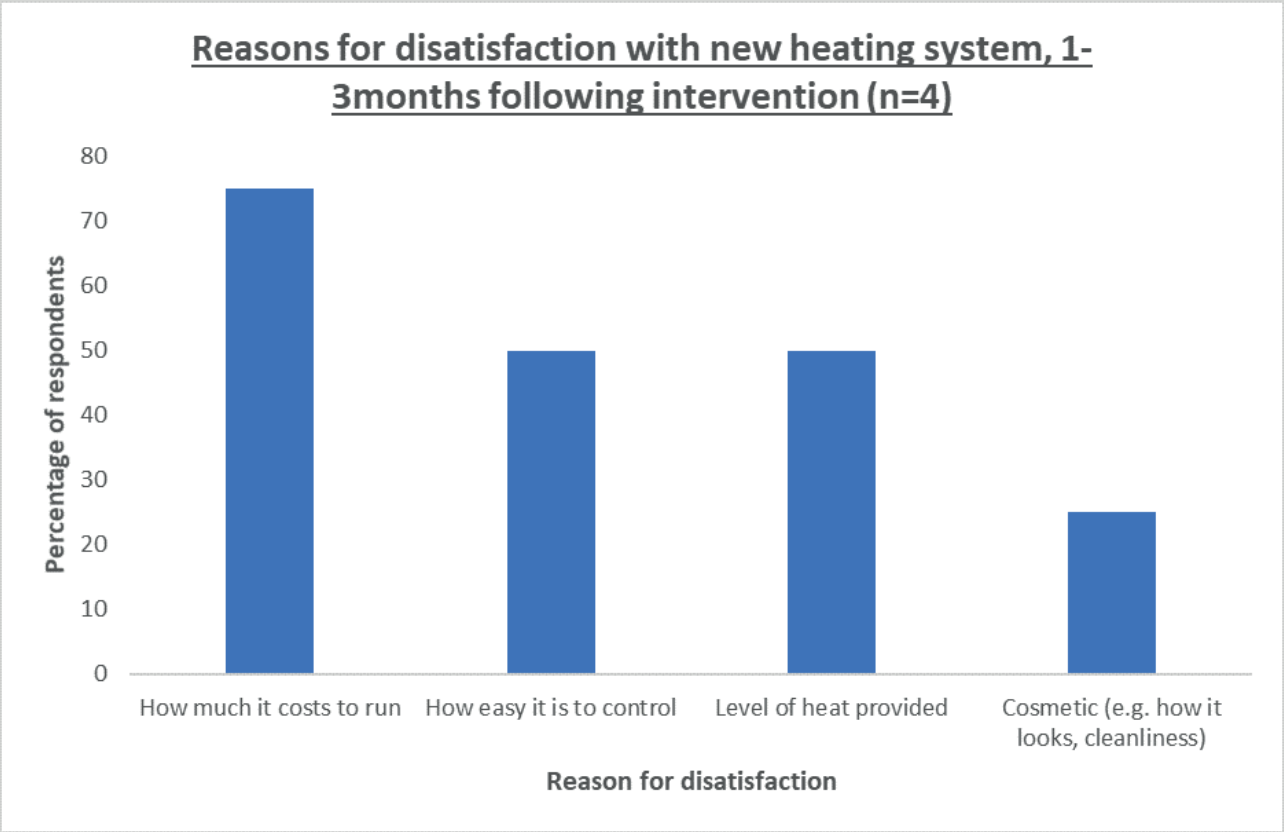


Chart 12: Reasons for dissatisfaction with new gas central heating system



HOW DID PARTICIPANTS FEEL ABOUT THEIR NEW GAS CENTRAL HEATING SYSTEMS?

Survey respondents highlighted the increased cleanliness of the new gas systems, compared to solid fuel ones, explaining that ***"the house is cleaner"*** and ***"no longer have the mess of coal"***. Others commented on their improved access to hot water: ***"I now get hot water in my kitchen"***; ***"we have hot what whenever we need it. Nice!"*** whilst some commented on how warm they now felt at home: ***"Just love it! So nice and warm"***. Such aspects of satisfaction were not only desirable in terms of increased comfort, but for some were essential in being able to manage health conditions in an affordable manner.

> *"Without this I would have gone into heating poverty. I am partially sighted, and my daughter suffers serious lung problems. To have no heat or hot water could have been very serious".*

The change to gas represented a cultural shift for some households who had had to adapt to a new way of doing things and a new kind of heat: ***"Getting used to the different kind of heat has been a bit funny for me, because I always had a coke fire. I've grown up with that."*** Having advice and support to understand and use the new system had however helped such participants to successfully adapt: ***"We've had help from ever so many – it's been absolutely brilliant."***

Interview participants similarly described how their new system was much cleaner than the one they used previously, because they no longer had to manage solid fuels and clean the system: ***"It's much cleaner now. When it rained and you went out and then you were travelling all the muck in, and stuff like that, that's not happening now, you see."*** Others said that the physical burden of managing their heating systems on a day-to-day basis had been lifted: ***"Now I've got nothing to lift. It makes a lot of difference. With my back as it is, that was really hard."*** This also highlighted the potential for reducing falls risk over winter: ***"It will be even better when the snow and frost comes, I think. I won't have to go outside two or three times a day."*** The way households were able to supply their homes with fuel had changed too – allowing the act of acquiring fuel to fall into the background of daily life, whereas it previously had to be actively factored into it. ***"We used to have to go and get the coal. We had to go to Hartlepool to the coal yard. It [the new system] makes a lot of difference."***

People now felt that they heating systems were easier to manage. Those who previously had solid fuel systems especially were keen to emphasise the sense of freedom and relief that they now enjoyed after no longer having to carry heavy fuel or clean out dirty systems. Not only could this improve mobility, reduce the risk of falls and the exacerbation of joint pain, but could furthermore alleviate worries that the toxicity of the fuel they were using was affecting their respiratory health. In turn, the effects of such benefits could impact upon mental health by enabling a sense of improved wellbeing: ***"I ended up having a lot of trouble with smoke pouring out of it; black smoke. It was horrendous; it ruined my furniture, everything. But now, I haven't got that, and it is such a relief knowing it's not going to happen again...I'm not getting out in all weathers, shovelling loads of coke and putting it on and off the fire, and cleaning all the dirty ashes out, which was a monotonous job."***

> *"In the winter, clearing out the fire was time consuming and dirty. You know what I mean? And wood ash is fine, but when you have the furnace out, it can be quite toxic. And of course, I couldn't- I have got a ruptured bicep on my right arm, and I could not really easily lift the pan up and put it up onto the top of the stove to take it out. It was difficult for me. And if you drop that all over the floor, you are in problems, you know?"*

The relief of having more efficient heating and hot water systems that were easy to manage was further reinforced for some by a sense that they had now been able to escape the 'danger' posed by their previous heating system; whether as a result of no longer breathing in toxic fumes, avoiding hot fuel being spat out, or having access to improved sanitation: ***"It was a danger, I thought...When we moved into the house [the system] was leaking. The heating wasn't working. The water wasn't. So from a sanitary and health point of view, it needed doing."*** Of particular value to participants was the controllability of their new heating systems, and the opportunities that presented to access heat on demand, whenever it was needed: ***"It's just the convenience of being able to push a button."*** For those who previously had storage heaters, it meant knowing that they could access the heat that they needed at any point: ***"You fired the storage heaters up...but it got to about 2pm or 3pm and there was no heat left, so you were sitting freezing of a night... [Now] I just put it on as I want. On and off as I want."*** It also meant they could more easily regulate the temperature within the home and in different rooms: ***"Now, if I feel I am a bit cold, I love just turning the dial up...I like that flexibility."*** Those that previously had solid fuel systems no longer had to plan daily routines around the management of a fire: ***"Now, if I am going out, I can put it on a timer."***

However, interviews with participants revealed how, for some, the process of getting accustomed to their new heating system had taken a little longer. In one case, a life-long fear and mistrust of gas central heating systems had been difficult to overcome, especially when combined with mental health issues which meant the participant struggled with anxiety.

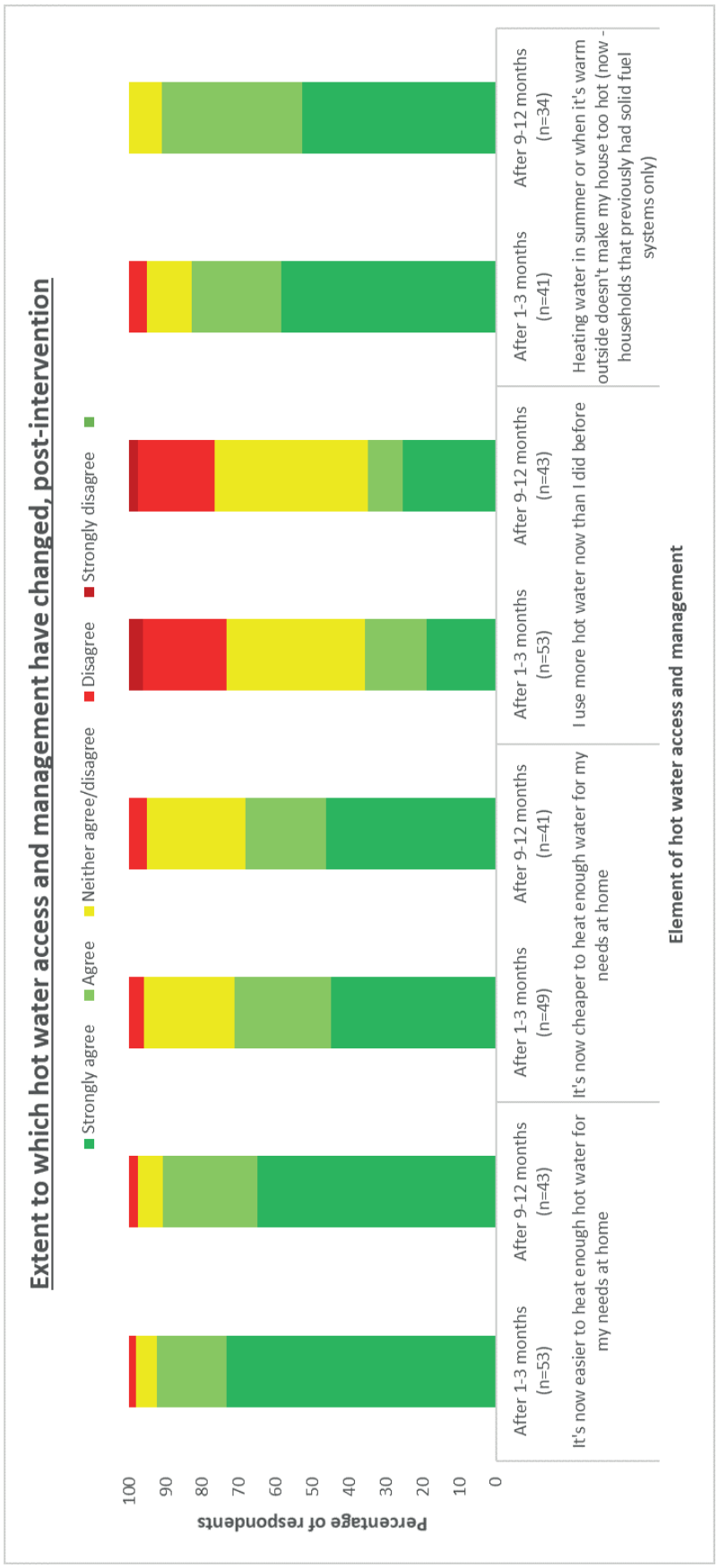
Nonetheless, the combination of no longer having to struggle with a solid fuel system and improved thermal comfort throughout the house had slowly convinced them that they had made the right decision, even if some of their worries were still present. For such clients, having dedicated support and tailored advice throughout their journey with the scheme had served to allay their fears and guide them through the process: ***"When you first get it [gas] in, you're not used to it...[But] the advisor came out and showed me how to do things, she even sorted out a gas tariff and things like that. She was brilliant, she helped me quite a lot. I've had help all along the way. You can't really do any better than that, can you?"*** Such support was important to ensure participants were able to make the most of their new gas central heating systems, and that they would not suffer detriment as a result of not knowing how to switch tariff or change an Economy 7 meter, for example. One participant who had received such support noted that, if it hadn't had been for the NEA advisor in helping them to get their meter and tariff changed, ***"I wouldn't have had a clue what to do."***

Impact on hot water access and management

Chart 13 (page 35) shows that the extent to which access to hot water and its management changed post-intervention remained broadly consistent between the 1-3 month and 9-12 month stage. By the time a year had passed following the installation of their gas central heating systems, 90.7% of participants felt that it was now easier to heat enough hot water for their needs at home. Over two-thirds (68.3%) felt that it was now cheaper to heat enough water for their needs at home, whilst over 26.8% neither agreed nor disagreed. Households that had previously used a solid fuel system also tended to agree that heating water in summer or when it was warm outside did not now make their house too hot (91.2%). Over a third of households now felt that they used more hot water than they did before (34.9%), and 23.2% felt that they did not.

Overall, these results suggest that households were now more able to affordably and easily access enough hot water to meet their needs, post-intervention.

Chart 13: Changes to hot water access and management following installation of new gas central heating system



IN HOT WATER: PRE-INTERVENTION

> *"I just boil the kettle if I want hot water. But, I'm on a water meter so I'm really careful with water."*

> *"I need the hot water for my daughter's skin, because she uses emollients in the bath. She has to have a bath morning and night, so it's a constant...we've got a shower, but she needs to be actually sitting in the bath with the stuff in. And the system trips out all the time, so you're maybe getting an hour or two of hot water and that's it. It's been horrendous."*

Before their new gas central heating system was installed, people often found they had to manage their hot-water activities around what their old system allowed them to do: ***"I have to do the washing up after the fire's been on quite a while. I can't do anything in the sink in the kitchen [until then] because the hot water runs off the fire."*** This could be particularly annoying for those households needing instant access to hot water for their health: ***"when you're putting the booster on for two hours it's [awful and not good] for my son's disability. You've got to wait two hours for a bath, rather than just filling it up."*** Having to run a solid fuel heating system in order to access hot water could also lead to over-heating in the summer: ***"Summer's the worst because it's red hot outside and then you have to have this fire on for the hot water. I've got no alternative but to have it on."***

Whilst the cost of fuel and the inefficiency of systems could affect a household's ability to achieve affordable warmth at home, it also influenced how able they were to use enough hot water sufficient to their needs: ***"You're not even getting a full bath at the end of two hours [on boost]. You've got to keep putting it on for hours and hours to have a bath. And it's like over £3 just to put the two-hour booster on."*** Problems like this could have implications for the hygiene practices of households (with multiple family members having to share the same bathwater, for example) as well how able families were to manage their health conditions.

> *"We've only got a small boiler, so I tend to turn it on in the morning for an hour to get the water hot and then I turn it off. It doesn't go on again until if I wanted a bath, I would put it on for another half an hour just to make sure it was nice and hot. But, we can't have a bath each; we have to share the water because we wouldn't get two baths out of it... [When we get the gas] it will be lovely to fill a bath, cover yourself and just lie there."*

Notes from the field, pre-intervention

There was a house in an old pit village which had not been touched since it was built. It had a coal fire in the kitchen, and that was it. There was no other form of heating in the rest of the house. They'd had an instant hot water point put in for the bathroom/kitchen. There was still an outside toilet, but they had created an indoor one by converting the pantry and adding a sliding door. That was their bathroom. They had what they called a 'midget bath', which was a really small bath tub. The daughter had to fill a kettle to fill the bath up with hot water for her mum. But, because of the mum's health problems, she couldn't do the same for her daughter. So, the daughter had to go to a friend's house to have a shower. When I went into the house, it was freezing cold and dark. It felt like I had walked into a house from Beamish, one of those living museums.

GOING SWIMMINGLY? POST-INTERVENTION HOT WATER EXPERIENCES

Post-intervention, interviewees described how having improved access to hot water meant they were able to make bathing and hygiene related decisions based on preference rather than according to the limitations set by their hot water system. They also highlighted how they could more easily and quickly access the hot water that they needed: ***"We have a disability shower. Before we had to use a button and a pump to get water into the shower. Now the shower is just hot immediately you put it on. You don't have to wait for the water; it's like more pressure in the shower. It's easier to get showered now."***

Participants described how having a gas boiler had improved how they were able to manage hot water needs over the summer, without having to simultaneously over-heat their property or spend money on extra fuel. Others highlighted how having a gas combi boiler had enabled them to reduce waste in terms of heating up water that they didn't need. ***"With the combi boiler, it's sort of like you use the energy as you require it. It's not using it, storing it and using it if you need to. It's the economy of it."*** Some participants had even been able to change how they used certain rooms in the house and their cleaning practices as a result of having improved access to hot water, post-intervention: ***"Before, it was just an electric heater, a little heater, above the sink. So, I never used hot water in the kitchen. I boiled a kettle if I needed hot water. So, that's been a really big difference, having taps that produce hot water."*** Improved and more frequent access to hot water meant that households could make cost-savings that went in some way towards alleviating financial worries associated with energy use, at the same time that they enjoyed the use of more, and more reliable, hot water.

> *"This was one of the bugbears [of the old system]. I either had to be uncomfortably warm because I had the back boiler on, or cold because I just didn't want to put it on because the weather was too warm and therefore we didn't have the hot water, unless we put the immersion on which was very pricey."*

In the summer, participants that previously had solid fuel systems described how they no longer had to go without hot water in order to avoid turning on the heating when it was too warm: ***"If I wanted hot water to wash, I had to put the fire on. So, a lot of the time, I just boiled the kettle instead of putting the fire on, for a bit of hot water."*** This had meant that, over the summer, the range of hygiene practices available to a household had been greatly reduced: ***"If you didn't have a fire on, you just couldn't get a bath, or you didn't have water to wash up."*** Some noted that, now, they had seen a corresponding reduction in their water bills as a result of not having to run-off excess hot water when the pressure in their old system got too great: ***"You are only paying for the hot water that you are using. Before, because of the fire, the water used to get that hot the radiators would go bang, bang, bang, and you'd have to run the hot water off. So, I was wasting the water. So, even my water bill has gone down."***

> *"I could have a bath every morning now.... As soon as you turn the hot water on, a few seconds and it's coming hot. With the coke, it was hit and miss. You had to run the tap and wait to see what temperature it was coming out at before I could run the bath."*

Participants highlighted the freedom they now felt in being able to access enough hot water for bathing as and when it was needed or desired, rather than having to plan bathing schedules around the timing of their hold system: ***"It means I can jump in the bath whenever the fancy takes us, whereas I was having to wait for the Economy 7 kicking in."*** Not only did this lead to a greater sense of convenience, it provided a sense of relief for those who needed regular and dependable access to hot water for the management of health conditions: ***"[I feel] more confident, safe, and it's better for my daughter. It's good to know that when you switch the tap on the hot water is going to be there and you've got the right sanitation."*** It also led to a reduced sense of waste as a result of not having to heat a full tank using an immersion heater, for example: ***"I just switch the thing on now and off you go. Much better, 100% better."***

> *"I literally had a mark on the side of the bath [before]. I could have three inches of hot water and then that was my limit. It was a bit like the war. I'm still very frugal, but I don't worry about the cost of it quite as much now."*

However, some participants did experience some difficulties relating to hot water, post-installation whereby the speed at which hot water arrived in certain taps, such as the kitchen or bathroom, was much slower than they had anticipated. This led to them having to run off what they described as a large amount of cold water, before the hot water arrived. For those participants who were on a water meter, this represented a serious worry in turns of how much their hot water was, in reality, costing them. It also presented issues for how well some participants were able to cope with existing health conditions. In cases where joint pain was present, for example, washing hands in the bathroom could become an uncomfortable experience since they were unwilling to pay more to wait for the hot water to kick in.

Such experiences suggest that households could benefit from clearer information before their installation takes place with regards to what might happen to the speed with which hot water travels through their system. Those who are on a water meter may require additional advice and around water efficiency and how to access water poverty support, should they struggle with their water bill.

Caroline and Lynette

Caroline lives with her teenage daughter, Lynette. Caroline is partially sighted and suffers from multiple health conditions. She is also the primary carer for Lynette, who has chronic bronchitis and asthma, and who suffers from chronic skin and joint conditions.

On some days, Lynette cannot move because of the pain in her joints – hot baths can help to alleviate this. She also needs constant access to hot water in order to manage her skin condition, and her respiratory illnesses means that she needs to feel warm at home in order to feel well.

The pair live in a private rented, semi-detached home. Their next-door neighbour is Caroline's sister, and her mum lives on the same street. When the property came up on the rental market, Caroline jumped at the chance to take it: she was very familiar with the layout of the properties in the street, which would make it easier for her to move about the house in light of her visual impairment and mean she was less likely to have to rely on others to help her care for her daughter. At the same time, being so close to her sister and mother meant that, whenever she did need support with looking after Lynette, help would be very close at hand. Caroline had had to stop working a number of years earlier both as a result of her own health conditions and the need to be a full-time carer for Lynette.

However, after moving in, the property had not lived up to her expectations: in fact, it had disappointed them in every way. The heating system did not work and would constantly trip the electricity out. It was extremely inefficient and cost a fortune to run. Nevertheless, she had to have it turned on all the time, to make sure the house could be warm enough for Lynette. As a result, she was falling deeper and deeper into fuel debt. The immersion heater did not work well, and Caroline struggled to fill a bath with hot water at any one time. When she did want hot water, she had to wait for up to two hours. This made it practically impossible for Lynette to use hot water to manage her joint and skin conditions in the way that she needed. When they wanted to bathe, they had to go to her mum's or sister's home instead. When things got really bad, she would borrow money from her sister to cover the cost of her energy bill. The home that Caroline had envisioned became in her mind an unsanitary place which represented danger, discomfort, and a risk to her own health and that of her daughter. It was a space which compromised her ability to fulfil the role that she felt was required of her as mother and carer, and that she wholeheartedly wanted to give.

One year on, and Caroline and Lynette now have access to a working central heating system which provides them with as much heating and hot water as they need, without having to worry about the cost. Their energy is cheaper, and they have succeeded in having some of their outstanding fuel debt written off. Lynette is able to have as many hot baths as her condition requires, and her respiratory symptoms are less severe when she is warm at home. Caroline is now pleased that she doesn't have to worry about keeping the whole house warm all day. She feels relieved that Lynette now has access to a comfortable environment in which she can be home-schooled without risking a worsening of her respiratory illnesses. The property no longer represents danger, ill-health and poor sanitation to them. Instead, it has become a home – a space which they can fully occupy; a space where they can feel safe; and a space where they can access the resources they need to be able to feel well and focus on education, family and community. They have been able to decorate and take pride in the beautiful home which they have been able to create. Caroline has told her landlord that, should they decide to sell the property, she would be keen to have first refusal: this is the place where she wants to live, and where she wants to stay. It is her home.

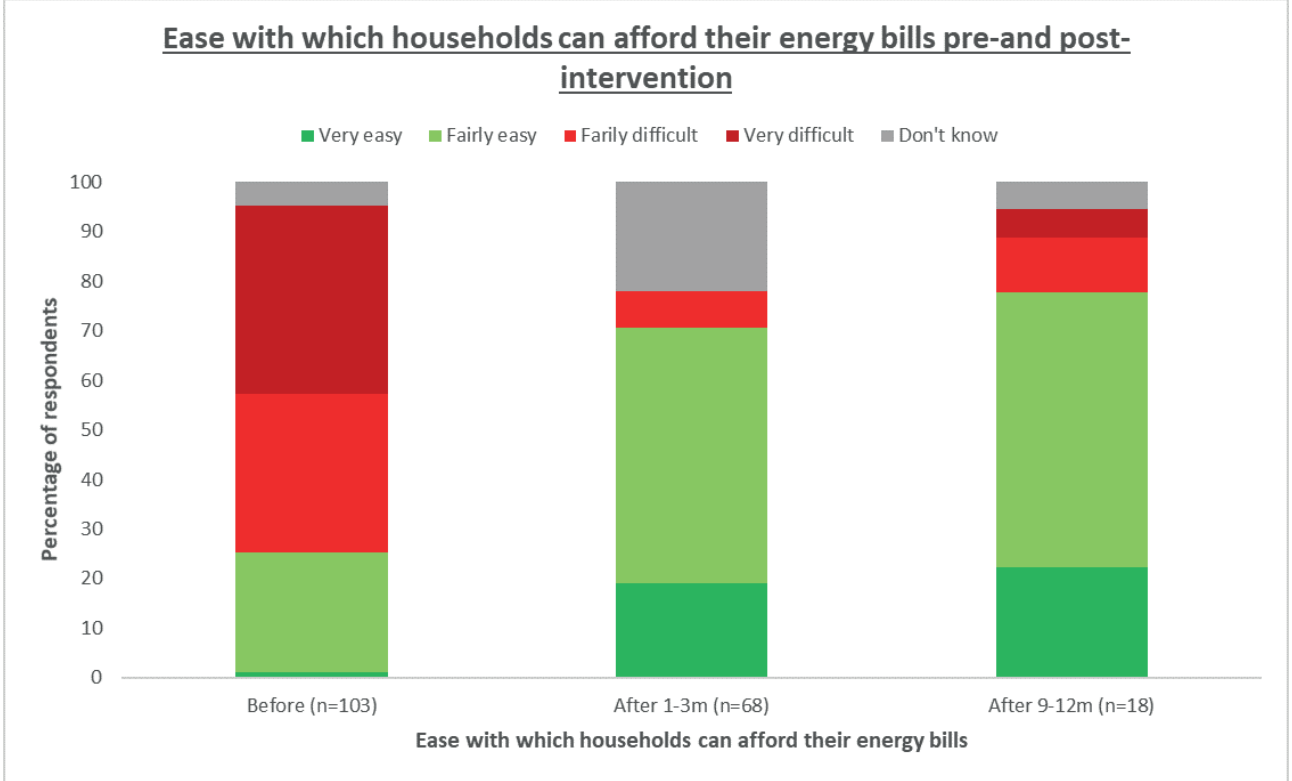
Impact on bill affordability

This section assesses how far the intervention impacted upon the affordability of participants' energy bills, and whether the ease with which they could afford to pay both energy and other household bills changed after they received support. It looks at how far households were practicing harmful coping mechanisms or rationing heating and/or other essentials before intervention and assesses whether the frequency and severity of such practices changed afterwards. It also examines whether participants experienced any changes to the manageability of their household finances more generally and the level of financial worry that they were experiencing.

Before receiving their new gas central heating system, 69.9% of respondents said that they either found it fairly difficult or very difficult to afford their energy bills. A quarter (25.3%) found it either very easy or fairly easy. By the time 1-3 months had passed, 70.6% of respondents now felt that it was either very or fairly easy to afford their energy bills, and 7.4% found it difficult. Over a fifth (22.1%), however, said that they did not know (this is likely to be attributable to the fact that they had not yet received a gas bill). By the time 9-12 months had passed, 77.8% of respondents said that they found it fairly or very easy to pay for their energy bills, and only 16.7% found it fairly or very difficult.

These results suggest that, post-intervention, a greater proportion of households were finding it easy to afford to pay for their energy bills than had done so before, though some were still experiencing financial difficulties. (Chart 14).

Chart 14: Ease with households can afford their energy bills, pre- and post-intervention



Before receiving support, interviews with participants revealed the extent to which they faced difficulties in affording to pay for their energy: ***"I only allow myself an hour to heat the water. Sometimes I wash only once a week, because we can't afford it. I hate the way I live. We can't afford to keep our electric heating on. We put it on for an hour and turn it off. It's horrible. To be able to just go and turn it on would be great."***

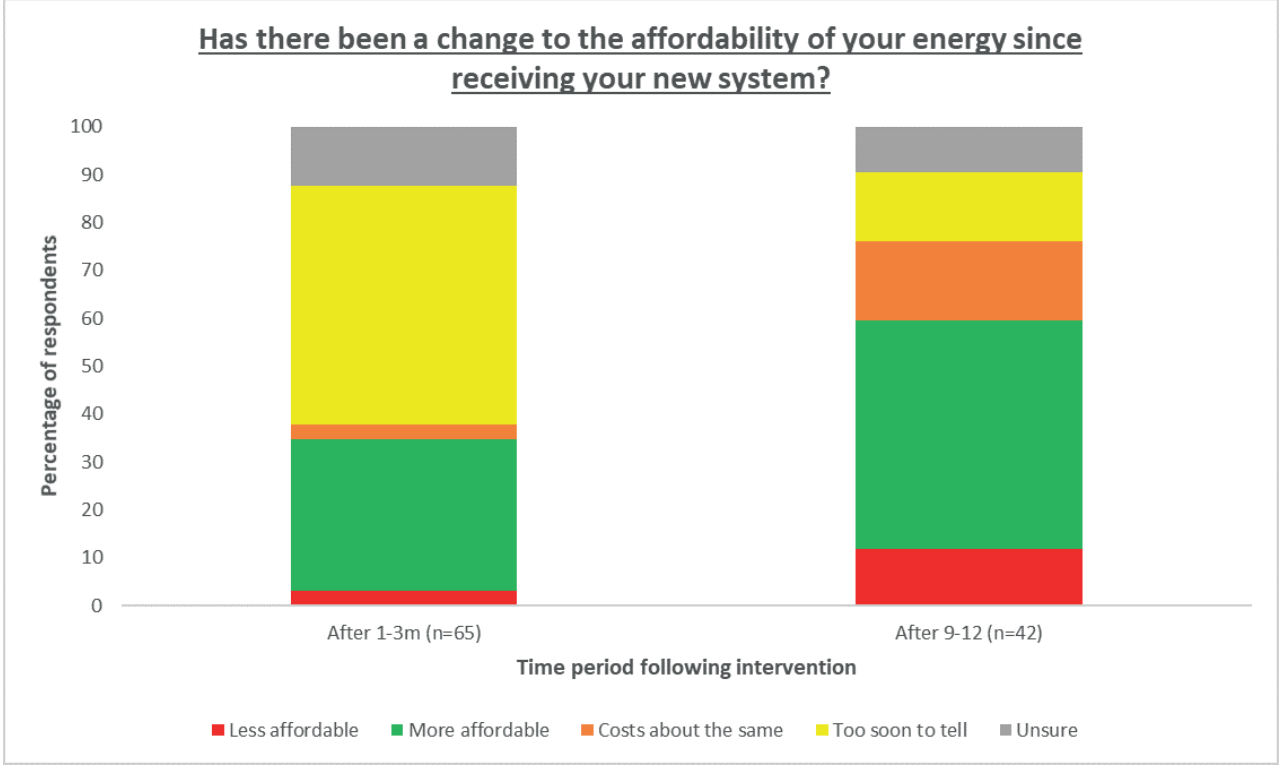
Notes from the field, pre-intervention

One of the properties we visited was on a row of terraces. A fair amount of the properties on this street were boarded up, and the property next door to the one we visited had a police notice on the door. A lady came to the door in her pyjamas (this was at around 2.30pm). The first thing I noticed when we were welcomed in was the big red glow from the electric fire. The rest of the room, though, was very dark. She said she kept this fire on all the time as bills were included in her rent. Plus, as soon as the fire was turned off, she said the heat went away instantly. As she'd been poorly, she needed this on to keep warm - she explained that it was her only source of heating. Next to her on the sofa was an ashtray and a mobile phone with a broken screen. There was no door leading to the kitchen, which meant any heat that was entering the living room was quickly escaping. She explained that her ex-boyfriend had punched a massive hole in the door, and she was waiting for her landlord to replace it, as well as carry out various other repairs which she'd reported some time ago. She went on to say her ex-boyfriend had beaten her up on many occasions and she now had damage to her spine. She was receiving treatment for this as well as counselling. Ms E mentioned that her ex-boyfriend was in prison and was due out anytime. She was fearful of her safety and she was in contact with the police who were coming out to visit her before his release. Ms E had a lot of mental health problems: depression, bipolar, anxiety...she did mention others, but I can't recall them. She had recently lost her job due to her depression and had incurred rent arrears as a direct result of this. She started talking about how she would decorate the place once she had her new gas connection. She planned on getting 2 rolls of wallpaper to decorate the chimney breast, so she could make the place homelier. She spoke excitedly about how nice it was going to look.

Participants were then asked how far they themselves had perceived changes to the affordability of their energy bills post-installation (Chart 15). At the 1-3 month stage, half of respondents felt that it was too soon to tell, although almost a third said that it was more affordable (31.8%). A year on, almost half felt that their energy was more affordable (47.6%) and 16.7% said that it cost about the same. For 11.9%, bills were less affordable.

Bills that are less affordable could relate to some households paying more for their gas than they did their previous fuel, or that they were now consuming more energy than they did before due to improved performance or controllability in their new heating system. It may also relate to continued wider financial vulnerability of the household. Overall, however, results indicate that the project was successful in enabling greater access to more affordable energy, or that it at least did not increase bills, for a large proportion of participant households.

Chart 15: Perceived changes to affordability following installation of new heating system



REFLECTING ON BILL AFFORDABILITY, POST-INTERVENTION

> *"Before, I was paying £36.40 a week for solid fuel. Now I pay £7 a week for gas"*

> *"I was paying £160 a month for coke. I only pay £40 a month at the moment for my gas."*

> *"With the combi boiler, it's sort of like you use the energy as you require it. It's not using it, storing it and using it if you need to. It's the economy of it."*

Survey respondents noted improvements to bill affordability, post intervention: ***"Before, I was paying £93 a month for my electric and now it's £27 a month and £20 a month on my gas, saving me about £46 a month. Plus, my home is much warmer now."*** Others noted that: ***"We are only paying half as much for the gas as we were for solid fuel. It has made a major difference in our lives."*** For others, reduced bill expenditure related to improved running costs of their heating system. This included those whom no longer had to pay to heat their homes in order to heat water over the summer. ***"The multi-fuel burner had to be on all day for central heating and the immersion heater was on all the time for really hot water. Gas has given me a new lifestyle."*** Improved control could also help to reduce costs: ***"Not having to pay to heat up radiators overnight. I don't need to worry about planning everything around the local weather forecast which isn't always correct!"***

One interview participant described how the control they had over paying for their energy now meant that they no longer faced immediate financial pressures, unlike when they needed to buy solid fuel to say warm: ***"Now, we know what to expect. Before, it depended on how cold it was as to how many bags or coke I had to order. And it was £16 a bag. My husband has cancer, so he was really feeling the cold. It was costing me £64 a week, for coke. That was an enormous amount every month to pull out, and I couldn't not do it, you had to keep him warm. This way [paying by direct debit] at least we know how we're on."***

> *"That is the wonderful thing about this. It's constant. I can put the heat on, all I've got to know is that once a month I can go online and pay and cover it. And I've been pleasantly surprised with the bills. Even if they double, they are only going to meet our lowest bill when we had the other heating."*

Previously, inefficient heating systems had meant that some participants were unable to heat, or at least, affordably heat their homes to an acceptable level and would simply not turn on the heating as a result: ***"I had everything on full whack. The heat was going in but it just wouldn't come out, because the elements had gone. I was paying for heat that I wasn't getting really...In the end I didn't turn them on at all."*** With their new gas central heating systems, it became possible to heat their entire home and actually feel warm. As such, some found that they were spending more on their energy than before, simply because they now had a central heating system that worked and provided them with the warmth they needed: ***"I heat more of the rooms, and I'm heating them more now."*** Others described how, whilst the difference in cost wasn't as big as they had expected, they valued other aspects of their new gas central heating systems, such as the cleanliness and convenience: ***"I don't have to go and buy coal or when it's snowing I don't have to try and go to the coalhouse...I don't have to clean the fire. So I mean the cost for convenience, you don't mind the cost."***

> *"It's been a godsend to be honest with you....I had electric heaters in here and they were costing me a fortune. My direct debit was £109 a month on my electric...now it's only £30 a month and I'm putting £30 a month on my gas...I'm saving a hell of a lot of money."*

> *"I was spending over £2000 a year on coke for the fire. My bill [for the past year] was £665 or something; that is a huge difference. So, I have always got a little bit of money left now."*

Some, however, felt that gas was more expensive than the solid fuel that they had purchased previously: ***"the price of gas is very expensive."*** For others, costs had increased because they were using their heating system more than they had previously done: ***"we are using more gas, but we are happy with the cost."*** In general, however, reduced or stable costs, improved access to dependable and controllable heat, and increased predictability of payments combined to result in positive financial outcomes for participants.

Coping mechanisms and harmful rationing practices

The research was keen to explore whether changes to affordability had impacted upon the prevalence and nature of rationing practices undertaken by households as coping mechanisms to deal with meeting the cost of household bills, including energy. Coping mechanisms such as the rationing of heating, not buying

essential goods and services, heating fewer rooms than needed or self-disconnecting from an energy supply are indicators of fuel poverty risk. It points to high tension in the household budget, and a complex trade-off between competing pressures. Typically, we hear this referred to as 'heat or eat', but in reality, it is a much more complex trade-off between essential goods and services. This section examines the extent to which households displayed fuel poverty risk in terms of their rationing habits prior to and after receiving support.

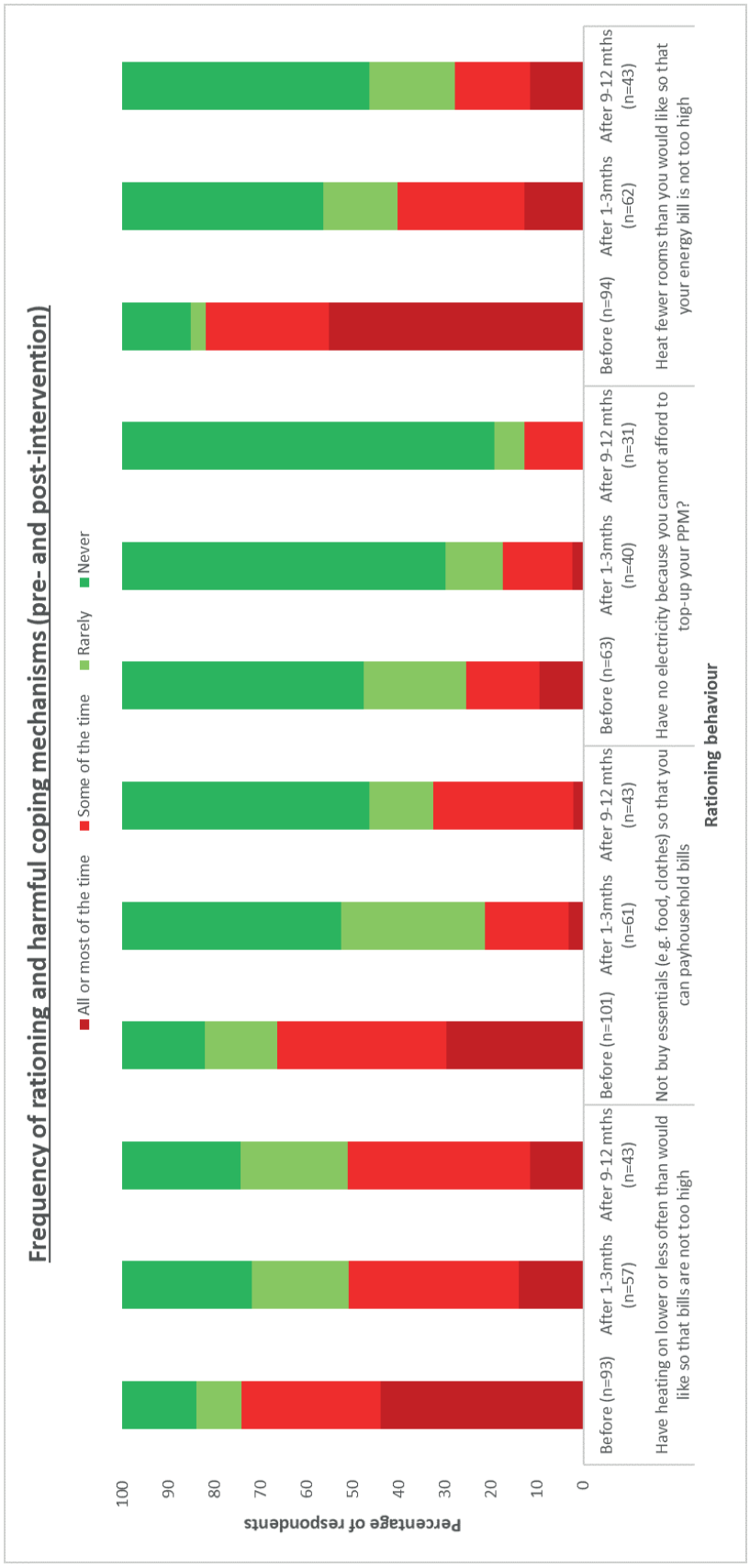
Before their new gas central heating system was installed, 74.2% of participants said that they would have their heating on lower or less often than they would like so that their bills were not too high, either all/most of the time or some of the time. ***This reduced by almost a third*** to 50.9% of participants at the 1-3 month stage, and 51.9% at the 9-12 month stage (Chart 16, page 45). Similarly, the proportion of households that were going without electricity all or some of the time because they could not afford top-up their PPM ***decreased by almost half from*** 25.4% before intervention to 12.9% one year after (Chart 16, page 45). The majority of participants had also been heating fewer rooms than they would have liked so that their energy bill was not too high, pre-intervention (81.9%). ***This reduced by more than half*** to 40.3% at the 1-3 month stage and by two thirds to 27.9% at the 9-12 month stage, post-intervention (Chart 16, page 45).

These results indicate that the proportion of participants resorting to the rationing of heating, going without electricity due to self-disconnection from their PPM or heating fewer rooms in order to save on their bills had been greatly reduced following the provision of energy efficiency measures and advice-based support. However, for some participants, their financial situations were such that they were still obliged to ration their heating and energy consumption to some extent, indicating a continued financial vulnerability within the sample which could not be alleviated by energy efficiency support alone, despite the wider benefits and improvements to bill affordability and ability to stay warm that were reported.

Chart 16 also shows that, before intervention, two-thirds (66.3%) of participants were not buying essentials such as food and clothes so that they could pay their household bills. This ***reduced by more than two-thirds*** to 21.3% 1-3 months after intervention, though this then increased slightly to 32.5% 9-12 months afterwards (still a reduction by more than half). These results indicate that the support received was effective in reducing the extent to which rationing of essentials was frequently occurring amongst a large proportion of households. The more dramatic reduction in rationing seen in the 1-3 month follow up than at the 9-12 month stage could reflect the fact that the later survey was issued at the end of the winter period – a time when households were likely to be facing increased financial pressures more generally and so perhaps resorting more readily to rationing than they would at other times of the year. It could also be an indication of continued financial vulnerability amongst households within the sample, who were obliged to continue to implement coping strategies in order to effectively manage their household budget at the same time that they perceived heat as being more accessible and/or affordable as a result of their new system.

It is important to recognise here that households participating in the scheme were eligible to do so precisely because they represented the most vulnerable sector of society in financial as well as health-related terms, and that the causes of deprivation are multi-faceted i.e. fuel poverty is generally not the result of poverty alone, though the two can be inextricably linked. As such, the alleviation of subjective fuel poverty may not generally equate to an alleviation of wider poverty and the complete eradication of rationing practices (often described as 'frugality') in order to intricately manage household budgets, at the same time that it can make coping with wider challenges easier and life more comfortable in some aspects.

Chart 16: Frequency of rationing behaviours and harmful coping mechanisms, pre- and post-intervention



CUTTING BACK: BEFORE

Before receiving support from the scheme, participants described how they would feel the need to cut back on food to make sure they could meet the cost of energy and other bills: ***"Basically, I don't shop. You're frightened to spend because you think we've got this bill coming on."*** One householder summarised the situation as: ***"it's either heat or eat...I can't cope with the cold."*** Such dilemmas could lead to quite intricate food management systems at home: ***"You got to buy things in bulk when you've got the money so that you can put it in the freezer, so that if you have to, if you're short one week, you know what I mean? You can cope if you've got food in the freezer."*** Others, meanwhile, borrowed from friends or family in order to meet the cost of their heating and hot water: ***"I'll borrow off family, probably every three weeks until I'm on monthly pay."*** This was especially the case for those who were unable to cut back: ***"I can't obviously do that [cut back] because, having a son with a disability, I've got to cook and he's got to have a bath."***

> *"I go shopping and I think well, I cannot buy a full load of shopping because of my electric bill, so I'll go without. I'll have to put it on my electric."*

> *"You're frightened because you think you have to turn the heater up. It's going to be another big bill and you do worry. I try to wear cardigans and if it gets cold in the night you bring the duvet down, you know. In the night when the temperature does drop, I turn everything off and go to bed, just because it's warm."*

> *"People laugh at me because I permanently have a couple of fleeces on my chair ready to wrap around me. And, if not, I've got one of those little tiny fan heaters. It's literally facing me, about two foot away from me, and if I'm really cold, that gets switched on."*

Some were simply cold, because they could not afford to turn on their heating: ***"I've sat in the cold several times. There's only so much you can pay for out of your weekly state pension and that's not a great lot neither. You know, it takes a good third of my weekly pension to keep this fire going."*** This could mean that people simply resorted to going to bed and shutting themselves off from the world to achieve a modicum of warmth at home. Participants would even put up with suffering pain as a result of feeling cold, rather than risk getting into debt: ***"I'm stuck in here all day in the cold. Sometimes I wear gloves in the house and then it keeps the hands warm. I'd rather suffer the pain than having the grief of getting, you know, going into debt and stuff like that. I'd rather be in pain."***

A number of people had tried different ways of keeping warm at home, rather than turning on the heating : ***"[My wife] has got a rug over her, most of the time. She sits in the chair and she has this rug over her to keep herself warm."*** Another participant exclaimed: ***"What's the point of having a house with so many rooms when you can't go in and use them basically when you want?"*** Others looked for ways to access alternative fuels that they could burn, without having to order additional solid fuel supplies: ***"You do things like, if you've got old newspapers or old books, you wet them and wait until the water drips out and it turns into what you call a briquette, and you burn them."***

Households had developed ways of planning their day to take into account the cold in different rooms: ***"I go up and turn the radiator on in the bathroom or in my bedroom about half an hour before I want to go to bed or have a bath. I only heat the room that I'm in and not the others ever. I tend to set up a living area where I can read and eat and talk on the phone and have as much as possible in that room. I then have it really comfortable and pleasant to be in, and in winter I just travel in the rest of the house as [little] as possible."*** Some even resorted to leaving the house in order to find some warmth elsewhere: ***"The time when you think 'oh, I'm off for my tea at my daughter's on Monday', but I'll stay there until about 9pm so you're warm, and sometimes you just have a walk out, go to the shops, because you'll be warmer there. It's ridiculous when you've got to go out your home and be warmer somewhere else."*** Such experiences meant that 'home' would become a place of survival or endurance – not a place to enjoy or be at ease. Not only were such participants unable to feel comfortable in their homes because of the temperature, but the very fabric of their lives became interwoven with the strategies that they had to implement just to try and balance the pressure of bills with the sadness and discomfort of being cold.

> *"I have to plan things. So, I'll let the washing up pile up so I'm not spending too much time in the kitchen. Then I go in and boil the kettle and just do it all at once. [It's so cold in there] I have to steel myself...I just try to organise the day so that when it's cold I'm not trying to do too much...the main living room at the back of the house downstairs is the one that I spend the most time in because that's the one with the friendly plastic fire and where the sofa is, and it's a really big sofa. So, I can get onto that with a blanket, sometimes I have an electric blanket over the blanket so as to add a bit of extra warmth, and thick socks."*

CUTTING BACK: AFTER

Post-intervention, participants described how reductions in the cost of their energy meant that they now felt able to have the heating on higher and more often: ***"It's so affordable that it's not a problem. I don't worry about turning the heat up. It sounds so dramatic, but it has totally changed our lives here, it really has."*** Having that bit of leeway introduced into household budgets as a result of energy savings meant households could now buy essentials that they previously would have gone without. ***"I used to worry. I had to just prioritise and I had to buy the coal to heat the house. The heating and food come first but I couldn't buy clothes and this and that. So, yes it has made a difference... It's freed up a bit of money."***

> *"I can have little treats now that I couldn't have before, because I am saving a lot of money. I'm saving £80 a month, even more so through the summer. All this money that I have saved...I have got money in the bank, and that is a nice feeling. It's a bit like contentment. And that's a good feeling, to feel content. I have got a little bit to fall back on."*

Some had been able to reduce their energy costs (while still staying warm at home) to the extent that they were able to make considerable savings. Such experiences had a transformative effect on their lives, enabling a sense of financial independence, self-reliance and of no longer living or surviving on the brink: ***"[Before] I***

> *"Before I got the gas installed, it was week to week, waiting for my benefits and that and I never really had much money in the bank. Currently, at the minute, I've got about £500 in the bank and I know for a fact, it's all because of the money that I've saved on the electric and that... It's just nice just to have a little bit of money, just in case... I can now, of course, get a little bit more shopping and buy better food...[Now] I've got money in the bank, I've got food in my cupboards."*

> *"I do keep an eye. My biggest one is electricity. I do cut back on food, things like that. I just try to get by on the cheaper brands of food, so I know I've got more to pay for the bills and things like that. But, I like us to be warm. It's nice to be warm. Before, we were cutting back on the coke as well. I think now I'll be able to budget a bit better knowing that the gas is doing the water and the heating. I mean, we're OK, but you still have to be careful, don't you? Everybody has to cut back somewhere. You can't have everything."*

had to cut back on everything, even food. I have sat with no food to keep the heat in, because I can't stand being cold... Now, I can go out and get some shopping in and not feel any different; not scrimping and saving as much as I used to be. It's marvellous. I cannot thank you enough for putting it [the heating] in for me." The relief caused by greater financial savings in turn created benefits to mental health, with participants describing themselves as having a sense of contentment, security and, indeed, empowerment. It meant that people did not have worry about falling into debt, going without heating, food or other essentials, or having to resort to borrowing money from friends and family.

People could now travel throughout their homes without having to move between 'cold' and 'warm' zones. Not only did this increase their comfort level and sense of wellbeing within the home, but the elimination of dramatic temperature differences between spaces within a house could represent potential benefits to health, given that the experience of 'cold shock' has been linked with negative cardiorespiratory responses.[17] ***"It's a hell of a lot better because, normally, if you come out of your sitting room door and you are standing on the landing, it used to be absolutely freezing. But there is a radiator at the top of the landing now, so that is a lot better."*** It was also noted that being able to heat more rooms in the house had, in some instances, led to a noticeable reduction in damp and mould: ***"I don't get black mould on my bedroom ceiling now. I think it is with it all being warm at the same time, there's not like serious temperature differences."***

This did not necessarily mean, however, that households had stopped worrying about their finances or that they didn't look to economise where possible: ***"The bills come first before you do what you want with your money. We always look at the electric and the fuel and other things. We are pretty economical."*** One interview participant, for example, told us that they continued to be frugal when it came to how much electricity they used. Nevertheless, their new system had meant they could afford to worry less about the cost of staying warm and had even lessened the pressure they felt to constantly monitor how much energy they were using at home. As such, conversations with interview respondents did reveal the continued presence of coping mechanisms by some participants which they employed in order to make sure they could afford to

17 See *Connecting Homes for Health Phase 1 Review*, available at: www.nea.org.uk/wp-content/uploads/2017/03/Connecting-Homes-for-Health-Phase-1-Review.pdf

pay all of their bills. In some cases, this included cutting back on food and clothes. At the same time, their new heating systems had given such households a bit of budgetary breathing space to at least feel warmer and less worried, even whilst they were attempting to manage and stretch small household budgets: ***"I'm still very frugal, but I don't worry about the cost of it quite as much now."***

Indeed, Chart 17 (page48) shows that, before intervention, 61% of households agreed to some extent that they often worried about paying all of their household bills on time. By the time 9-12 months had passed since they received support, this had reduced to 34%. Similarly, 62.6% of participants had agreed to some extent pre-intervention that money was one of their biggest worries. After 9-12 months, this had dropped to 50%. Chart 18 (page 48) shows that, pre-intervention, just over a third of respondents (35.4%) agreed to some extent that their energy bills were manageable. After 9-12 months had passed, this had more than doubled to 76.8%. Before, 34% similarly agreed to some extent that their household budget was manageable, and this almost doubled to 67.4%, post-intervention.

These results support the suggestion that the scheme was successfully able to reduce financial worry amongst participants with regards to the management of household budgets and how able they were to pay their bills, though a degree of worry did remain for a proportion of households – this was likely linked to their wider financial vulnerability and circumstances.

> *"The bedrooms used to get cold and I couldn't stand [it]. I need to spend quite a bit of time in the bedroom and it was really, really cold in the bedrooms before I had this put in, but it's warmed the bedrooms up a lot now."*

> *"I'm still careful with the electricity. I don't have lights on anywhere except for the room that I'm working in. It's quite an adjustment to get used to the fact that I can be warm without worrying about what it's costing. It was very noticeable. I used to keep a daily record of my usage so I could be pretty sure just what activities were costing me. Whereas I haven't bothered doing that now."*

Chart 17: Level of financial worry, pre- and post-intervention

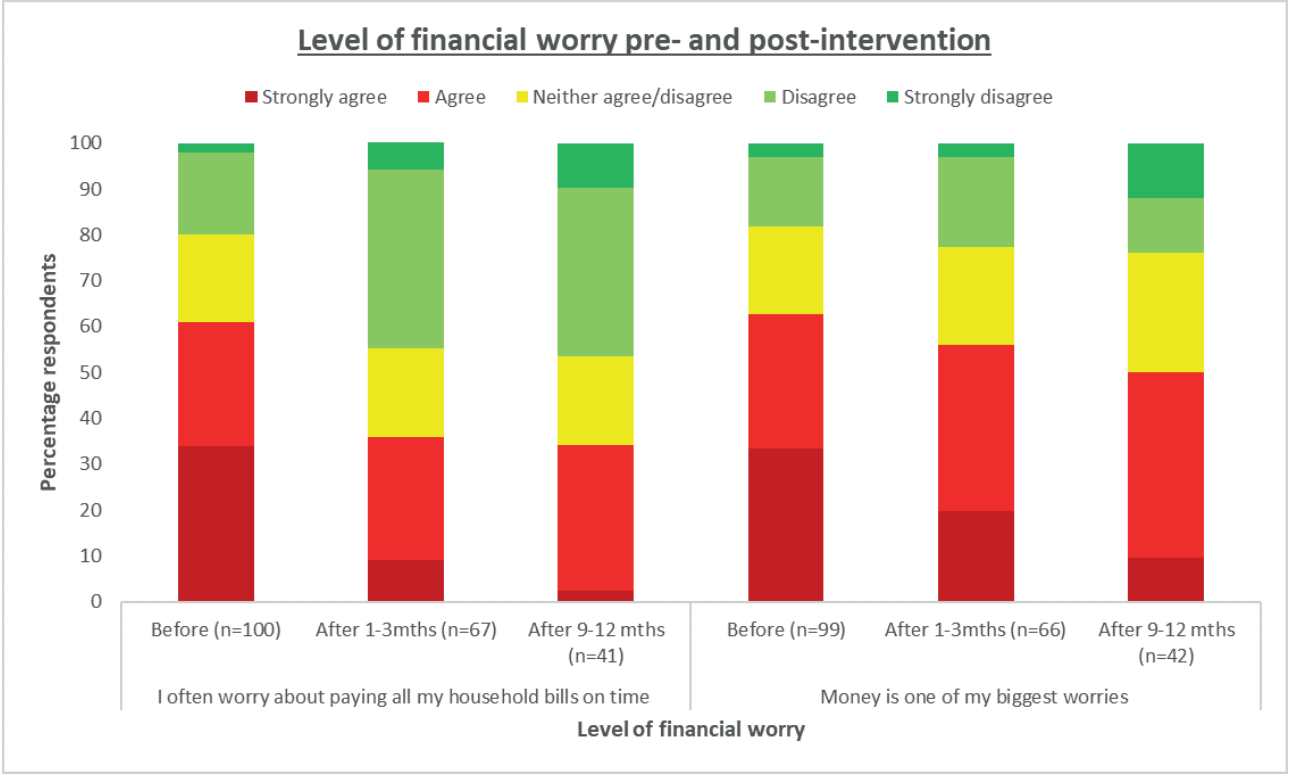
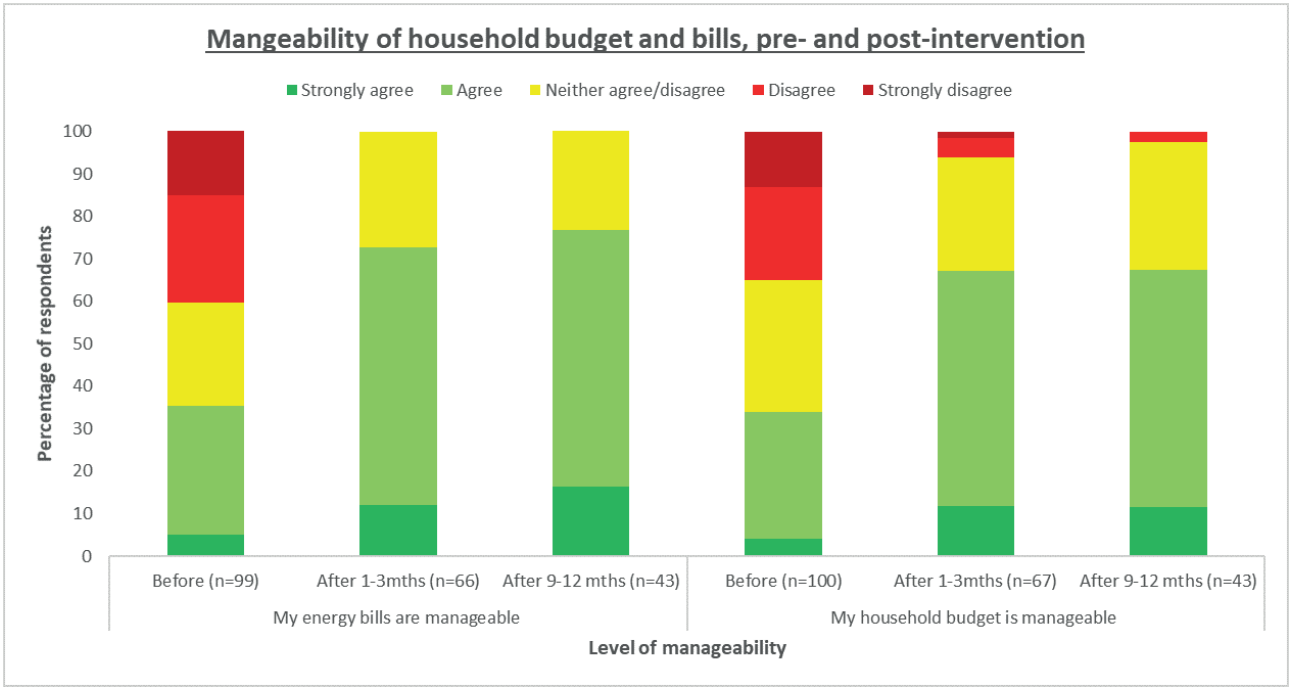


Chart 18: Manageability of household budget and bills, pre- and post-intervention



May

May is retired and suffers from COPD. At the point at which she signed up for the scheme, her lung capacity was at 39%, and she found it difficult to move around. She would be constantly wheezing and struggling for breath. Her pallor was grey, and her children would often joke that she had a pop band playing music live from inside her chest as a result of the continuous rattling noise that it made.

Before having the gas installed May had a solid fuel heating system in her home, which she hated. It was difficult to manage, and she struggled to fetch the fuel she needed from the outside store due to her breathing. She was convinced that the ash and dust created by the system was contributing to her respiratory illness and helping to make her symptoms worse. Not only that, but it made her reluctant to have her young grandchildren over to visit: she worried that two toddlers running around the living room were in danger of suffering serious burns and injuries should they fall over near, or get too close to, the fire that was in the middle of the room.

May has £740 a month upon which to live. Before, the cost of her solid fuel supply meant that she was paying £160 a month out of her pension, leaving her with little money to cover the cost of other bills and essentials. This meant that she had to be extremely frugal and careful in how she spent her money and was rarely able to save anything at the end of the month.

One year after her heating system was installed, May was saving between £80 and £90 a month on her fuel bills. Not only did this mean that she could now afford to buy more food and other essentials, but also that she could allow herself a little treat every now and then. She was finally able to put money into her savings account each month, which made her feel content and secure. She felt that she now had a little breathing space in her budget each month, and no longer had the stress of trying to make ends meet hanging over her.

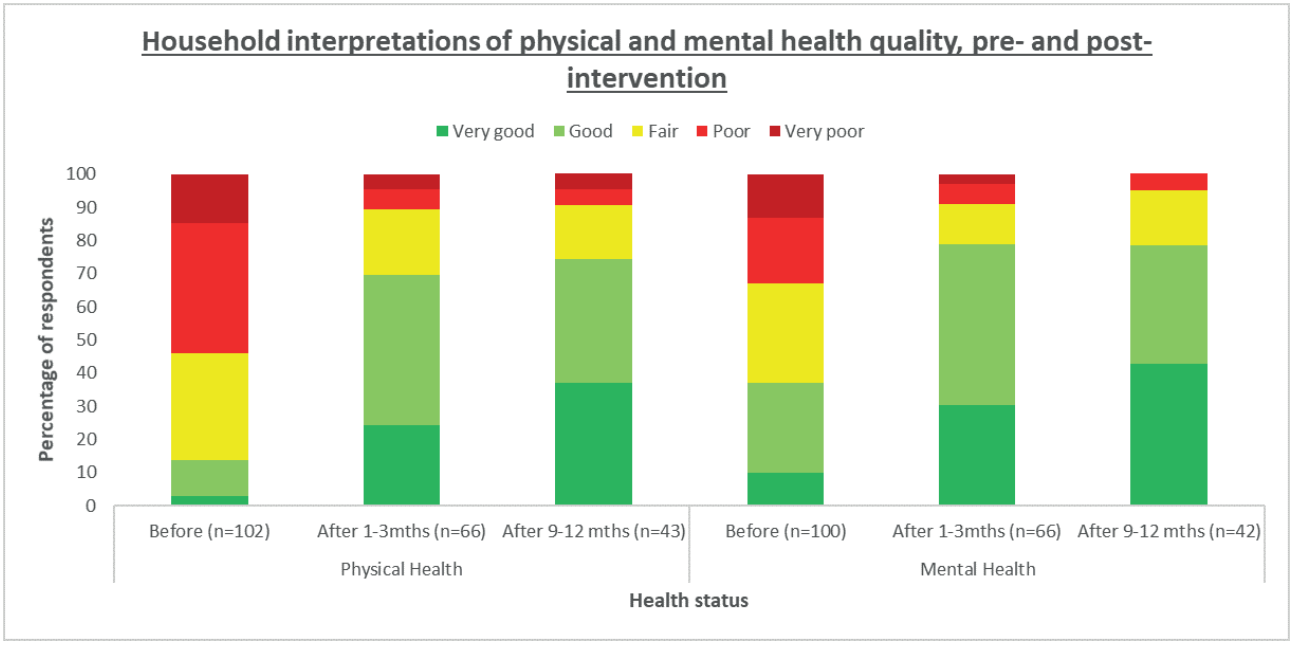
She had also experienced a dramatic improvement to her respiratory health. Her lung capacity had increased over the period of a year from 39% to 50%. When her doctor expressed surprise and pleasure at the improvement, and asked her if anything had changed, she said that she told him that it had to be down to her new gas central heating system. She said that she was warmer, and that the system was much cleaner, and she no longer felt that she was breathing in harmful substances whilst she was at home. She did not have to struggle to bring in fuel anymore and could instead just enjoy the warmth and the financial savings. Her children had noticed that her chest no longer made a constant rattling noise, and that her pallor had improved – she no longer looked grey. Furthermore, she had been able to spend more time with her young grandchildren, as she was now confident that they would not hurt themselves when playing in her living room: instead of worrying about the dangers that her home might represent, she could simply enjoy being with her family. May felt as though the scheme had changed her life for the better and likened it to having won the lottery.

Health and wellbeing

This section looks at how far participants had experienced changes to their physical and mental health following their participation in the scheme. It explores how households perceived their physical and mental and their ability to cope with existing illness before and after intervention, and assesses the extent to which households linked changes to their health or ability to cope with illness and/or disability with the support that they had received. It also examines how likely households were to link the quality of their health with being cold at home pre-intervention, and whether this changed afterwards.

Chart 19 shows that, pre-intervention, only 13.7% of participant households rated their physical health as either good or very good, and 37% rated their mental health as such.[18] However, 1-3 months after their intervention, 69.7% of participants rated their physical health as good or very good, and 78.8% rated their mental health as such. After 9-12 months, 74.4% rated their physical health as good or very good and the proportion of households that rated their mental health as such remained stable (78.6%). These results indicate that, after receiving support from the project, participants were significantly more likely to report good physical and/or mental health than they were before, and that positive changes to household perceptions of health persisted (and, in the case of physical health, continued to accrue) in the year following their intervention. Whilst the reporting of good physical or mental health may not necessarily reflect the presence or absence of specific health conditions (being in 'good' or 'bad' health can be relative and a matter of individual interpretation), the very fact that participants were more likely to view themselves as being in good health suggests either an improvement to existing conditions, an easing of symptoms and/or a change in their ability to cope.

Chart 19: Household interpretations of physical and mental health quality, pre- and post-intervention

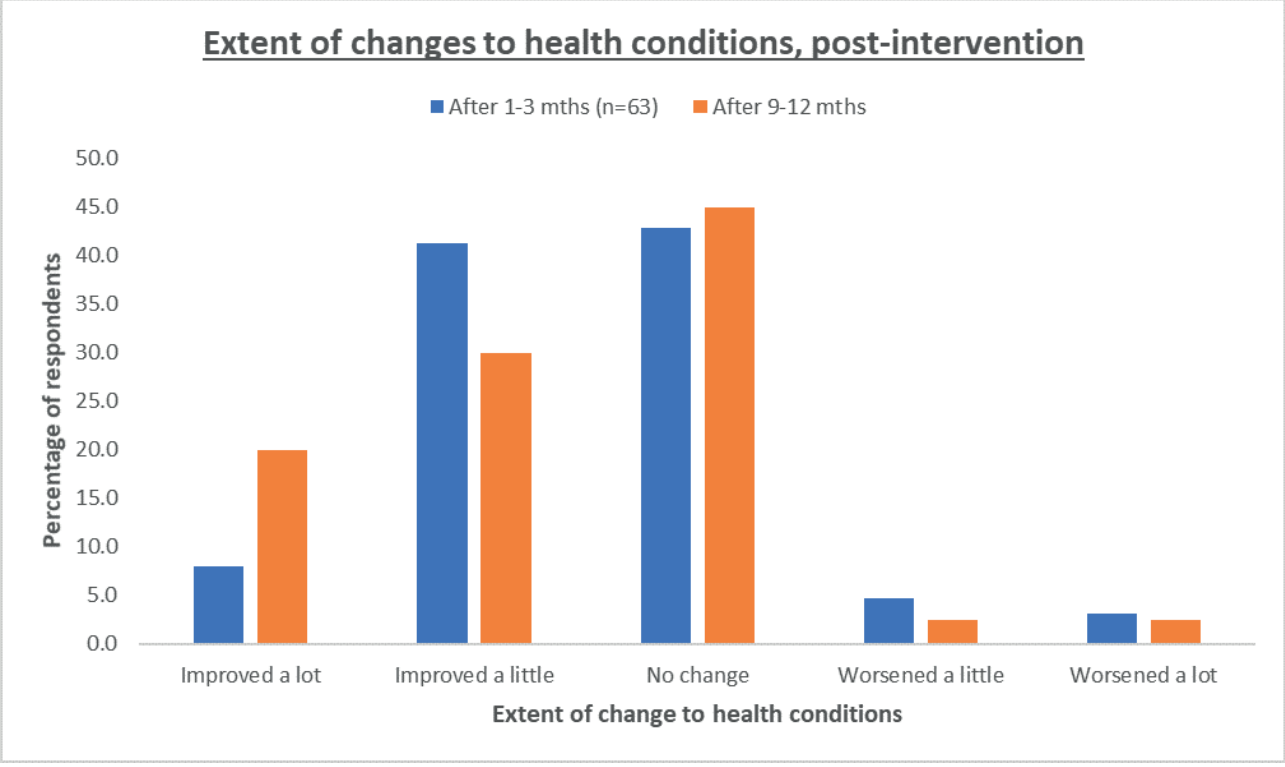


18 It should be noted that individual interpretations of being in 'good' health can be made in spite of the presence of health conditions within the household – all households that qualified for the scheme had someone living in them with at least one health condition, except in circumstances of acute need and future vulnerability (e.g. there was a new-born baby in the home).

Indeed, post-intervention, half of respondents felt that their health had improved to some extent (49.2% at the 1-3 month stage and 50% at the 9-12 month stage) (Chart 20). There are also indications that the health benefits of the intervention continued to accrue as time went on, following the initial provision of support: after 1-3 months 7.9% of respondents felt that their health had improved 'a lot', but after a year this had increased to 20% (Chart 20).

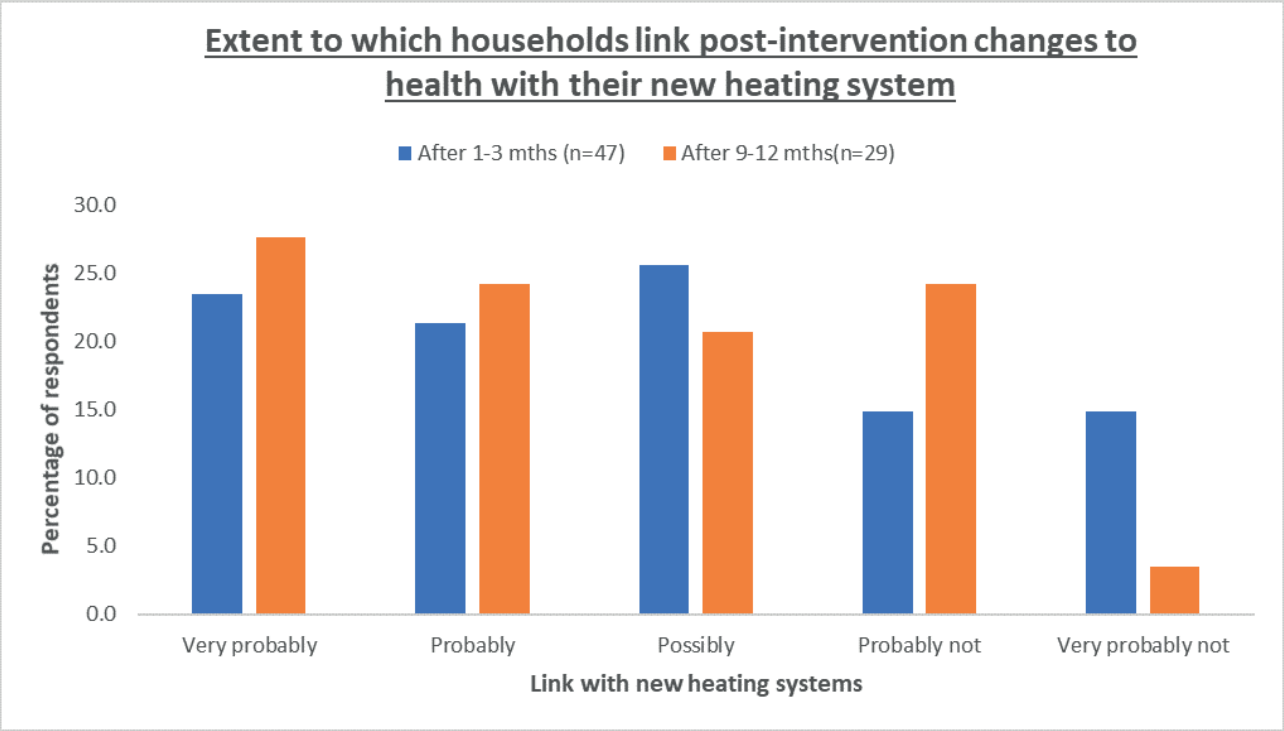
Furthermore, Chart 20 shows that just under half of participants reported having experienced no changes to an existing health condition at the 1-3 month (42.9%) and 9-12 month (45%) stage. Many of the health conditions present in participant households were long-term, chronic illnesses that were unlikely to improve significantly or be 'cured'. However, it is possible that living in a home that was warmer and more affordable to heat could have prevented a worsening of their symptoms or helped them to better manage their conditions. As such, 'no change' may represent a positive impact, of a participant not having experienced a further decline to their health, at least partly as a result of the support that they received. Meanwhile, 5% of participants reported a worsening of an existing health condition, one year after their intervention. Again, this may not necessarily be linked with the installation of their new central heating system, but instead represent the inevitable progression of the health condition in question.

Chart 20: Extent of changes to existing health conditions, post-intervention



To explore the relationship between changes in health and their intervention, participants were also asked how far they felt that any changes that they had experienced to an existing health condition were linked with the new central heating systems, gas grid connections and advice that they had received. One year on, over half (51.7%) felt that any changes they had experienced were either very probably or probably linked with the support they had received. Another fifth (20.7%) felt that they could possibly be linked. Just over a quarter (27.6%) felt that they were either probably not or very probably not related (Chart 21).

Chart 21: Extent to which households link post-intervention changes to health with their new heating system

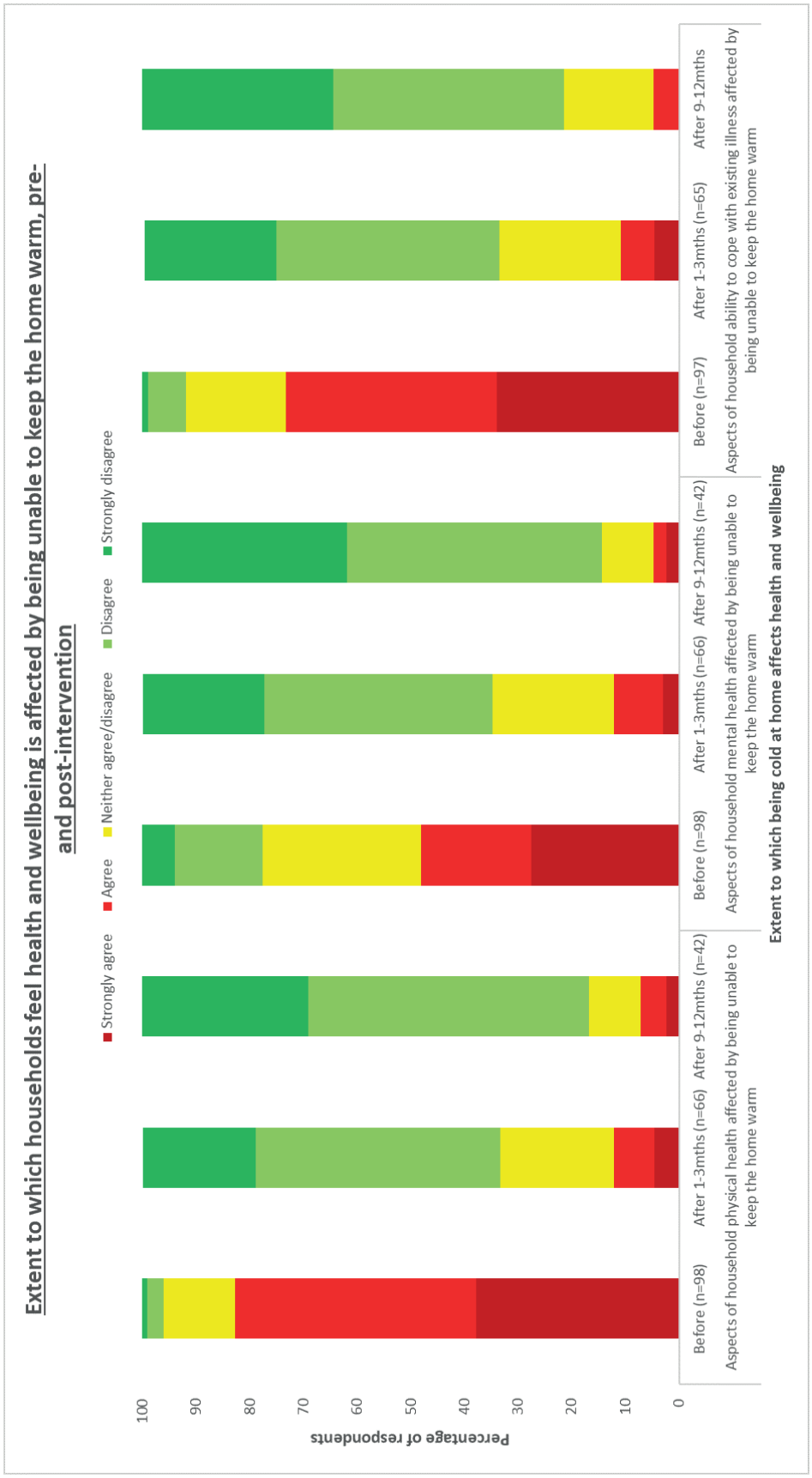


Taken together, the results from Charts 19, 20 and 21 indicate that, post-intervention, participant households were more likely to perceive themselves as being in good physical and/or mental health, were likely to feel that existing conditions had either improved or at the very least not worsened, and that to varying degrees they were likely to possibly, probably or very probably link observed changes to health with their new central heating systems.

Furthermore, Chart 22 on page 55 shows that, pre-intervention, 82.7% of participants agreed or strongly agreed that aspects of their physical health were affected by being unable to keep warm at home. However, 1-3 months following their intervention this had reduced to 12.1%, and to 7.2% after 9-12 months. Similarly, before receiving support, around half (48%) of participants felt that aspects of their mental health were being affected by being unable to keep warm at home. This had dropped to 12.1% 1-3 months after they received support, and to 4.8% one year afterwards. Finally, whilst almost three quarters of respondents (73.2%) said that their ability to cope with existing illness was affected being cold at home before intervention, afterwards this was reduced to 10.8% (after 1-3 months) and 4.8% (after 9-12 months).

The fact that participants were less likely to feel that they were cold at home and that this had a corresponding impact upon on their health and wellbeing after the intervention provides further indications that the project was successful in significantly alleviating the physical and mental health impacts of living in a cold home for participant households, as well as improving their ability to cope with existing illness. In addition, improvements continued to be seen up to a year after households had received support, suggesting that the health-related benefits of such support could accrue and endure over time.

Chart 22: Extent to which households feel health and wellbeing is affected by being unable to keep warm at home, pre- and post-intervention



EXPERIENCING COLD-RELATED ILL HEALTH

> *"When you're cold you tend to become a bit more sluggish, because you're trying to conserve energy and so you're more likely to just be inert and cover yourself up to keep warm, and not put out energy into doing anything productive or creative. What that makes me do is just not want to get up and start being active. I know that once you are active you warm up you don't notice it, but it's that period between cooling down and summing up the mental energy to get up and do something, even if it's to make a cup of tea to warm you up so you'll feel more like doing something."*

> *"There have been times when I've just kind of gone to bed you know. I've got a small telly upstairs and I'll just climb into bed during the day and watch telly upstairs rather than heating up the house just for one person like."*

> *"My chest – I put I down to this fire because I've had it in that long, the dust and the fumes that have come off it and particularly once when the chimney got blocked and the amount of fumes that were in here was absolutely depressing. I was off work after that with a bad chest."*

Before receiving support, the 'freezing' temperatures in certain rooms of the house had real impacts on participants' quality of life, and their physical and mental wellbeing. In one case, the cold at home led to one participant not even wanting to eat: ***"I mean, you go in the kitchen and you don't want to stand in there sometimes, it's absolutely freezing. I don't even want to eat. I don't want to cook because it's so cold."*** Another participant described how they found themselves becoming more and more immobile, as a result of feeling cold, limiting the range of activities they were able to carry out. Others simply resorted to blocking themselves off from the cold in the only ways available to them: ***"I isolate myself and go to bed, turn all the lights off and go to bed because it's depressing. It's really awful."***

Some participants related their current systems with their poor respiratory health: ***"I have problems with my asthma. If I haven't got the heating on, you get damp, you get condensation on the windows, so yes, it affects my asthma and yes, it affects my breathing at night."*** Similarly, a mother described how: ***"My son's got a problem with his breathing on a night. He's got to have an inhaler. [Being cold] does contribute because every time he's cold he does cough more."***

Feeling cold at home could furthermore affect how well someone was able to cope with existing illness: ***"In the winter he really can't stand the cold. Because of it [the cancer] being in his mouth, his mouth goes numb, and the number it goes the less he can talk."*** However, it was not just the temperature at home that participants linked with ill health: the nature of the fuel they used also hard a part to play – particularly in terms of the particulate matter associated with solid fuels: ***"When the coal's wet when you get it from the coal yard, you put it on the fire, and you get like a hot steam comes back out at you and it smells like raw eggs. And it just gets on your chest you know. It's absolutely terrible."***

Furthermore, participants related the cold to both reduced mobility and increased pain at home: ***"The colder it gets, the more intense [my joint] pain gets. And I sort of stiffen***

up. It's a lot harder to move when it's colder rather than being warm." It seemed that people did not underestimate the potential benefits moving on to gas would have for their mobility. Anticipated improvements represented a freedom and independence within the home that people were unable to experience with their old systems: ***"My husband keeps laughing at me because I say I'll be able to do things, even if it's just getting up and saying 'oh, do you want a cup of tea?' It's alright, I can do it because I won't feel the cold when I'm out there [in the kitchen], and I can't stand the cold."*** Others were looking forward to having a system in place where they would be able to control the temperature at home, to make sure they could create the most appropriate thermal conditions for their health requirements.

> *"You get a lot of dust. With gas or electric heating it's like a clean dust. I know that sounds stupid, but it's a clean dusty. When you get dust off a coke fire it's dirty, like a black dust. So, you know you keep thinking well if that's what the black dust is doing to my fire surround or wherever you know then what's it doing to my chest?"*

Living in a house that was cold and experiencing difficulties in accessing the levels of heat and hot water needed for comfort could also impact upon both the mental health and well-being of a person: ***"You get out of bed in the morning and it's absolutely freezing in the bedroom, go to the bathroom and it's freezing again. It ruins your day completely, and I've had enough of this, horrible. A proper downer."*** Another participant described the multiple worries and stresses that being unable to manage the temperature at home adequately: ***"If it gets too hot, I get agitated. Then, if it's cold, I worry. My little girl, if she's cold, I feel guilty."***

> *"I've always been a fit sort of guy. I used to work down the pit, but in recent years I've started to get arthritis. If it's cold, the arthritis kicks off. But if it stays warm my chest is bad. If it's really damp outside, that doesn't make it any better you know. You come back in and all you want is the heat, but then the heat makes you cough and it's a vicious circle really, because there's no control. It's either red hot or cold. [At least I'll be able to] control the heat, because I can't control it [now]. I think it's going to improve my health. It may not be 100%, but I'm absolutely convinced it's going to improve my chest more than anything else, at least 50%. I've got it in my head that at least 50%, perhaps even more. It will, it will. I've got it in my head. I've made my mind up."*

Discussions with participants revealed that for some, the offer of support coincided with a time when many other things were going on in their life to create multiple mental pressures: ***"I haven't worked for six months because I got really burnt out in my last job....I realised I just couldn't keep going because the work was taking too much out of me."*** Another described how: ***"I suffer from PTSD from my service in the army. I never told anyone else about it and just coped with it when I was working. Then when I had to give up work the impact on my mental health made it probably ten times worse."*** Such experiences could lead to a situation in which someone who was already socially isolated and struggling with mental ill health found their problems compounded by meeting the cost of fuel and being cold at home: ***"My mental health is terrible anyway. I've suffered from clinical depression since I was 17. My depression gets really bad the colder I am. I'm very creative, I make things, I do craft, but if I'm too cold to do them I'm just literally sitting on my backside doing nothing, and that in itself is depressing."***

"I worry about not being warm, because I know for a fact that I'll ache all over and worry about not being able to afford it. It does cause a lot of mental [stress] you know that you try to hide. You try to hide it, and I am pretty good at hiding it. You know, you hide it from the kids and you hide it from your friends and you know, even though you know you can be smiling and all the time but there are times when it's bloody heart-breaking inside. I feel I might not have money and that, but I got my pride."

"I would definitely, 100%, tell people in this position to just get that form sent off. Without the shadow of a doubt. This is what I talk about all the time to my friends and family, and I'm sure they're absolutely fed up with it, but I'm like 'it's only so many days to this and so many days to that and when I get my gas in.' I can't tell you what a change it made me feel. I can't put it into words what I feel like. It feels like a lottery win."

Notes from the field, pre-intervention

When I entered the property, the first thing I noticed was the cold. The tenant, who suffered from COPD, was sitting the living room wrapped up in a thick dressing gown. She said she wore it "all the time." Sometimes, she said, she wore it with "pyjamas, a jumper and extra trousers on underneath." The only sources of heating in the house were a single Economy 7 radiator and a small electric fire (which the tenant had had fitted themselves), both in the living room. The Economy 7 radiator was a 'hand-me-down' from another property that the landlord owned. The tenant had lived in the house for over a decade, and always paid her rent on time. Up until recently, she had kept a rotting window frame together using an old hair bobble. She described her home as being "bitterly cold" in the winter and attributed the cold to a worsening of her COPD symptoms. As she had lived in the area for so long, however, she was reluctant to move. Since her sons worked for the landlord, she did not like to push too hard for improvements to be made on the property, in case they lost their jobs. She spent around £42 a fortnight on her electricity, and almost every Saturday, without fail, her son would need to give her £20 to top up the meter. This made her feel like a burden. Having no sources of heating upstairs, the bedrooms were freezing cold. In the winter, she had to drag her mattress into the living room and sleep on the floor in there (as the only room with heating). She regularly sat with a duvet around her. I could tell that the current heating system and energy cost for the home was a significant worry for the tenant and something that impacted heavily on her everyday life.

In contrast, discussions with households revealed the positive feelings that signing up for the scheme in the first place could generate. For some people, the promise of gas brought with it the promise of life itself: ***"I'm really pleased I'm getting it done because at my age I don't think I could last [another winter] with it [my current system."*** Another participant stated that: ***"It will improve everything in how I feel physically."***

> *"As our old system had broken, we were using oil-filled radiators. Now we have a new system, we are a lot happier and warmer not worrying about the cost or the winter coming."*

FEELING HEALTHY AND WARM?

Post-intervention, survey respondents described how their new central heating system meant that limitations on their mobility were easier to manage: ***"Had coal fire - poor mobility so my new heating has been a life saver. Easy to use and keep warm and making my life easier."*** Often, this overlapped with additional benefits felt in terms of improvements to respiratory symptoms and having more energy: ***"I am not as tired - no longer having to breathe in the toxic smokeless fuel ash. It was hard work filling coal scuttle and carrying it indoors - sometimes twice daily in really cold weather."*** Older participants with chronic respiratory conditions reported an easing of the symptoms associated with their illness: ***"I have idiopathic lung fibrosis, causing shortness of breath and heart problems. The new central heating has improved my breathing a lot."*** Similarly, participants with young children would highlight the positive changes they had seen to their respiratory health: ***"My son's asthma has improved a lot – much less wheezing and coughing due to (I think) less dust/ash than having a coal fire used to generate."*** Others highlighted the improvements they had seen as a result of reductions in damp and mould: ***"My chest is a lot better. I do not use my dehumidifier anymore. No dampness in walls no more."***

> *"My young son has hardly had to use his inhaler on a night since getting the new central heating. Both kids sleep a lot better because their rooms are now warm enough to sleep in. Thank you."*

> *"I have COPD. When using solid fuel for heating and hot water it gets the house all smoky with topping up fire and cleaning fire out. Since having gas health has improved."*

> *"Since having the gas heating system we have had hot water on tap – something we rarely [could] use, due to very old heating system. My daughter can have hot baths to ease her spinal problem and joint problems and chronic skin condition. Also having the heat helps with her bronchitis and asthma."*

Those who had to be at home for extended periods and who needed to feel warm due to their health conditions also felt more able to affordably achieve adequate levels of thermal comfort: ***"I am more in the house because just had another operation and it's like a sauna in my house to keep me warm while I recover."*** Being able to feel warmer at home could furthermore help households to cope with the symptoms of existing illness: ***"I suffered with the cold, losing a lot of weight fighting cancer. And it is so much better now. My wife's wellness has also improved."*** Some households had observed direct improvements to their physical health: ***"This winter my two-year-old son has not got an infection at all."*** They also described the impact on mental health: ***"My physical health has not really***

"My husband doesn't have to go out now and carry the coal. He used to put his own kneepads on to get down and underneath [the boiler] when he had to fiddle around, because it never lit. But now he doesn't have that. That's much nicer on his back. It's much easier."

"When I used to be cold, I couldn't do anything. I didn't want to do anything; I just sort of snuggled up. I mean, I'm not leaping around, I haven't suddenly cured all my disabilities, but I am able to get around and feel warm and not worry about 'oh, I'm going to go out in the kitchen and do something' and then think 'no, I'm not, it's too cold, I'll stay here'. I can go out and do whatever I want in the house and it's lovely. My husband said I won't shut myself away in the winter now."

"I was terrified, you see. I was terrified I was going to run out of coke and he was going to cold back then...Especially in his mouth, where he had his operation for the cancer, because when his mouth gets cold he can't talk because it's like his face goes totally numb and stuff. He can't move it very well and you can't understand very well what he's saying. So yes, it's helped a great deal on account of him being so poorly."

> *"[Before] as soon as you opened the door you could smell the smoke, and it used to get on my wife's chest and make her bad. But we haven't got the smell of smoke in the house [now]. Since we've had the gas here she is not getting as many chest infections as she used to get. Now, we are not breathing anything in. She has got an emergency pack at home that she uses if her chest gets bad, but she hasn't had to use it."*

> *"When my chest was really bad, it was as though other people could hear my chest wheezing. The kids, after a couple of months, said 'eee mam, your chest sounds a bit better'. It's nice when other people think you are looking better. With the lung capacity, there is less oxygen going in and I always had a greyish pallor, and that has improved."*

> *"I've got arthritis all over, so the heat, it's nice to know in my mind that I've got constant heat now. Whereas before, with the log fire, if it was going to go out I couldn't get the logs to put it on, so it would go out and I'd have to sit freezing until my nice came round [to carry the logs in for me]. It's peace of mind now with the gas."*

changed, but I am more positive and attempt to do more owing to being more comfortable." For others, central heating was not the cure for their illness, but it could help alleviate, even by a small amount: ***"I am suffering bad pains in my arms, especially during the night but also daytime. Slight improvement with central heating but still in pain."*** Interview respondents further described how their physical health had improved more generally and attributed this to them not catching colds and other such illnesses: ***"I haven't had a bad cold yet. I'm usually due for one round about this time and that goes on for two or three days. I haven't had a bad cold yet and my wife says she hasn't had a really bad cold."*** We were also told: ***"I had chest infections the last two years before this [the installation] happened. I have not had a chesty cough or anything...I have sailed through it this year."***

Interviewees highlighted the changes they had seen in their respiratory health. Some linked this to greater air quality that came with the new system: "***I have asthma. I'm not as wheezy as I used to be. I'm not as short of breath. You used to get a smell in the house, especially upstairs when [the coke] was burning. We don't get any smells now. I am much easier breathing in the house now."*** One participant, who suffered from COPD, explained that her lung capacity had increased from 39% to 50%: an increase which she attributed wholly to her new gas central heating system.

Increased thermal comfort meant an easing in symptoms for some participants suffering from mobility conditions: ***"I've got sclerosis. It does help. I'm not as hunched as I used to be. We used to be hunched up on the settee. We're not hunched up now. Yes, I think it has made us a little bit better."*** However, improved mobility, or the alleviation of mobility issues, also came with changes to how heating systems had to be managed – especially when households no longer had to carry heavy loads of solid fuel about the house: ***"I am a bit more tottery on my feet. Physically, I just wobble a bit....it is such a relief to come down now, have a cup of coffee, go in the front room and just sit and watch a bit of the Breakfast show. I've not got to worry about the fire, or anything like that...I could not lift the coal bucket in, you see, because it was too heavy."***

In general, participants were keen to emphasise how the increased thermal comfort they felt at home had reduced pain, increased feelings of wellness, and enabled them to better cope with existing illness: ***"The hot water and lying down in the bath helps [my daughter]s] joints, helps her skin condition. The heat being at a certain level helps her respiratory level, because we can keep it at a level where she doesn't get a chill in the winter, which can set off her bronchitis, which can be pretty fatal if it gets bad. Having that heating has helped a lot."*** For some, those improvements had been rapid: ***"When people say it has changed your life, it has. It has improved my health; it has improved my wealth...I noticed that within the first three months."***

> *"Even sitting in the house now, my hands are warm. Before, they were always freezing cold. I've got a little pair of leather gloves here and I used to wear them in the house...I suffer from polyarthralgia as well. I've got joint and muscle pain. It's even eased the pain with that because before, when I was cold, my polyarthralgia was worse. I used to get stuff...Now, ever since I got that [the has central heating] done, I've been a lot better in the house, health-wise and that. It's made a massive difference."*

The benefits to mental health became evident during interviews with participants. Often, these were associated with increased feelings of comfort and a sense that someone's home was now 'on their side' and no longer impeding every day activities like cooking, cleaning, washing and drying: ***"Being warm enough when I want and being able to dry washing near a radiator means I feel more comfortable, housework is easier and my mood lifts because I'm not battling cold and damp all the time."*** Such feeling also came when participants now felt that they had 'gotten their homes back' and were now able to occupy all the space and all the rooms that were available to them in their home: ***"Having gas central heating system means we can now use the whole of the house, which means that we are more relaxed and less stressed than before. It has also helped with our [health] by feeling warmer."*** Some simply stated the links between happiness, warmth and having access to hot water: ***"I feel happier now we have some heat and hot water."*** One interview participant described the terror she had felt previously when worrying about how to keep her husband (who was suffering from cancer) warm, and how much her situation had now changed now that her fuel supply was more dependable.

> *"The stress we used to have was being able to afford the coal and the timber and the wood for burning. Knowing we had to sort our finances out to see if we could order it in. There was a minimum order I felt I could get my coal man to deliver. It was only about £50 worth, but £50 when you're on benefits is quite a lot of money if you haven't got it. Then you've got the same again for firewood. So you were looking at £100. We didn't always have the money and then it was just burning whatever wood we could find. I have literally been known to burn old furniture. I got rid of the rubbish. There were times it was very difficult. [Now] I haven't got that stress of worrying about where am I going to get the money? The bill will be there at the end of each month and I haven't got to make sure that I've got cash here and now to pay someone to deliver it. So, a lot less stressful."*

> *"Now, if I have to put the heating on, I'm not thinking 'oh my god I'm about to turn this off and go to bed.' The other side of the coin was the time that it took [for the old system] to come online. If you think, 'I am paying to heat these bricks up, and I really need [heat] now but I can't have it. I'm going to have to pay for another 24 hours. It was a really scary situation."*

> *"I can get dressed in the morning and know what I'm wearing will be enough for the day. I'm not having to dress up to go downstairs and then come upstairs again when I've got one room warmed and take off other garments. It does make life a lot easier indoors. The temperature is constant throughout the house and it's much more comfortable for doing everything. You're not going from a warm area into a freezing cold one."*

For some, improved mental health came with reduced stress and worry about how and when they were going to pay for their fuel. Improved predictability of outgoings meant they were more able to budget and plan ahead, and also meant they did not have to fear demands being made by solid fuel suppliers to pay for energy before they could use it: ***"Because I pay my gas monthly...I can budget much better. I don't have to pull out extra money for the coke on top of what I've normally budgeted for. [But now]...they take it out of the bank...I know they've got theirs and they're not going to come knocking on my door saying 'I need the money off you now'. It is less stressful."*** Another participant similarly described how they would struggle and worry to meet the cost of paying for their solid fuel at the instant that they needed it, which impacted upon their mental health. At the same time, their coping mechanisms for when they could not afford to pay for fuel (burning alternative and potentially harmful fuel sources) could have resulted in harm to physical health should the fuel compromise indoor air quality. As well as more flexible and predictable payment arrangements, reduced running costs overall meant stress was reduced: ***"[Now] If I have to put the heating on, I wouldn't worry too much about it, like I used to with the electric. I used to stress out big style at that. I was terrified of building a big electricity bill up. You know, I think it has improved my mental health if anything."***

Others noted that having reduced heating costs had helped them to enjoy a greater sense of mental wellbeing, due to not having to worry about their finances as much, or the decisions they might have to make in order balance budgets: ***"It [the gas] is literally half the price, which for your mental wellbeing when you are on a pension...because you are not struggling. Not heat or eat."*** Feeling that the intervention had improved both physical and mental health, as well as finances, led to a sense of elation in some participants: ***"They are the two big factors that people worry about, aren't they, health and finances? So to have a double whammy win in my book [for health and finances] is a bit like winning the lottery."***

Thermal comfort was also highlighted as being an important factor in improving their mental health post-intervention. People were now able to move freely around the house, which had in turn made them feel better mentally: ***"There are no worries now, you can go about the house freely. Because before we sort of staying in the room that was really warm when the boiler was really bad. Now, there's no worry. You can walk out. The whole house is warmer."*** This added to a general sense of wellbeing and comfort: ***"You know,***

the word 'wellbeing' describes it really well. You just feel safe and comfortable indoors, which I really don't think I've ever felt before." Having a cleaner heating system impacted upon mental health as well as respiratory health: ***"Certainly it's had an impact on my mental health, because I was sitting here in clouds of black smoke, which wasn't healthy at all. Now I haven't got any of that trouble. It's marvellous, absolutely fabulous."***

WIDER BENEFITS OF HEALTH IMPROVEMENTS

One of the wider ramifications of improvements to mental health resulting from improved thermal comfort and financial wellbeing were that some participants felt more empowered to address other areas of their lives that had also been causing them distress, such as high water bills. In one case, the guidance and support one participant had received from project advisors combined with the positive mental space in which he found himself post-intervention to enable him to have the confidence to call his water company and challenge a high bill. As a result, it became apparent that he had a water leak. Not only was he able to fix the leak himself, but the water company wrote off the high bill as a gesture of goodwill. Before intervention, it is unlikely that the participant in question would have had the confidence to take such a step.

> *"My husband is in remission with cancer. I've got a bad back so I couldn't get down to the fire. You used to have to raise it out and get the ash out and I couldn't physically do that. It meant he had to do it all the time. It was hard when he was poorly. You used to have to get up in the middle of the night to make sure the fire was still on, get the coke in. Now we don't have to do any of that. So, it's made a big difference to him. He can get a good night's sleep now and not worry about if the fire is going out."*

Another participant highlighted how her new system had enabled her to enjoy her relationship with her grandchildren by reducing the dangers she had previously perceived for them in her home. She was now happy that the toddlers could crawl around the living room without the risk of getting burnt by the fire. As such, she was happier to have them around more often. Beyond immediate benefits to mental health, then, the project had the potential to enable the growth and enjoyment of family relationships and reduce the risk of social isolation.

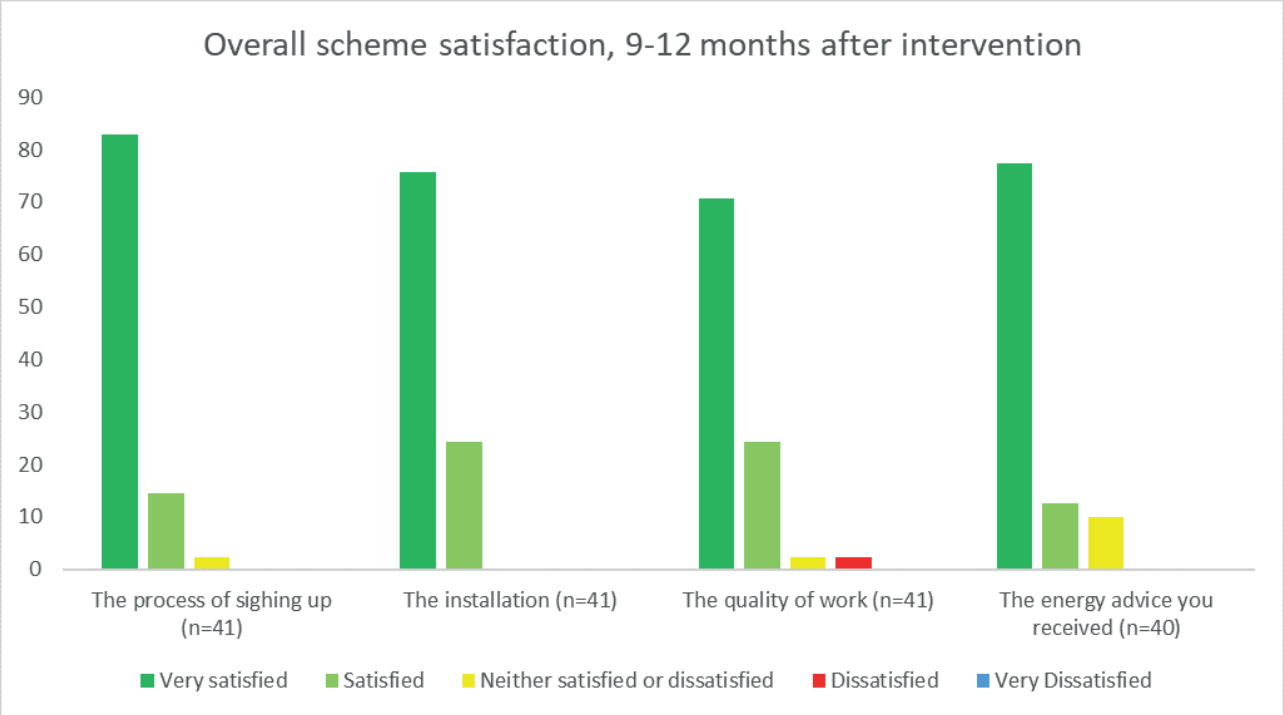
One survey respondent described how the intervention had helped their physical and mental health, as well as how well they could cope with existing illness, despite suffering from conditions that would continue to deteriorate: ***"Physical health better than before. Mental health: never been so chilled before, no worry about being warm. Knees are getting worse – ear and tear. Would have been a lot worse if the heating wasn't changed. More movement, no need to clean up the coke fire, so yes, it's really helped."*** Indeed, interviews with participants showed how having increased control over their heating system could help them to cope with existing illness: ***"I can turn it on and off as I want it [the new system]. That does make a difference. Being diabetic, if it gets cold, then my sugar levels drop. If the house is cold, I can't get my sugar levels back up."*** For others, changes to how their heating system was controlled meant they could feel more comfortable in the face of existing illness – without their heating system adding additional distress and discomfort. Having increased and more affordable thermal comfort at home could also enable people to better cope or deal with existing mental illness, rather than worsening it: ***"[I suffer from PTSD] and, with the mental health side of that, things are so much worse when you're mentally suffering particularly when you're cold. It makes it so much worse, But now, the house is nice and warm and that and it's spot on."***

Scheme satisfaction

This section examines overall satisfaction with the scheme amongst participants, including looking at their journey through the scheme, installation experience, the quality of works installed and the support that they received both before and after their new heating systems were installed.

Chart 23 shows that 97.5% of participants were either satisfied or very satisfied with the process of signing up for the scheme. The remaining 2.4% were neither satisfied nor dissatisfied. Meanwhile, 100% of participants said that they were either very satisfied or satisfied with the experience of having their home connected to the gas grid and gas central heating system installed. With regards, to the quality of the works carried in their home, 95.1% were either satisfied or very satisfied, whilst 2.4% felt neutral towards it and 2.4% said that they were dissatisfied. Finally, 90% of respondents said that they were either very satisfied or satisfied with the energy-related advice that they received, and no respondents were dissatisfied with it. This indicates that, overall, there were very high levels of client satisfaction amongst scheme recipients regarding each stage of their Connecting Homes for Health journey.

Chart 23: Overall scheme satisfaction – one year on



> *"I kept saying that when we could afford it we would get radiators...when we looked into it, it was much more expensive than we thought, and it was going to be a few years before we somehow got the money together to do it. The fact that this scheme came up, I could not believe it was free, because nothing is free nowadays. Literally, the letter dropped through the letter box, I opened it, read it and I sent an email all within twenty minutes. Because I thought, 'well, if this is real, I'm going to try and use it' I cannot thank you enough for this. It has totally changed our life. The scheme is absolutely brilliant and, if it has helped anyone else, there are going to be a hell of a lot of happy people about."*

Comments made by participants demonstrated the dramatic changes that had occurred in their lives as a result of their participation in the scheme: ***"[It has] allowed us to have heat and hot water for the first time in 20 years."*** Households now had access to heat and hot water at home, and no longer feared the arrival of winter: ***"We feel very privileged to have been approved for this scheme and appreciate all that has been done. We will feel the benefits when the winter comes and it's something we are not fearing."***

Respondents described how they were satisfied with each stage of the process, from signing up for the scheme, having their new system installed and enjoying the benefits afterwards: ***"I found the scheme to be well run through out every aspect, any questions we had were answered promptly and proficiently. The work carried out in our home was of an excellent quality and I would highly recommend this scheme. It has helped us immensely and we are now able to keep our home warm."*** Some were particularly satisfied with the advice that they received as part of their journey: ***"I thought the advisors explained change [to gas central heating] in a clear way without confusion."*** This was then associated with the improvements to their quality of life overall: ***"Helping less fortunate people to keep warm over colder months. Good advice from the people involved in the scheme. Made my life a lot better."***

Participants living in private-rented properties expressed relief and gratitude at having qualified for support, as it finally meant that they were no longer at the mercy of a landlord in being able to stay warm and access hot water at home.

Households would often link their sense of satisfaction with the scheme with the health-related and financial benefits that they had experienced: ***"From start to finish the process was amazing. I do believe that if more people had taken this opportunity their health and finances would vastly improve."*** As such, they would often express a sense of overwhelming gratitude: ***"I cannot tell you how grateful we were to be able to participate it has made our home and life more comfortable. Thank you."*** Such gratitude was linked with the transformations that people felt had occurred in their lives as a result of their participation in the scheme. For example, we told by one participant that: ***"You have definitely changed my life here for the better." Meanwhile, another described how: "[Things are] 100% different and better. If I could more than 100%, it would be 200%."*** Another exclaimed: ***"You made my day when you sent that letter through my door...It's the best letter I have ever had, and that is the truth...It's marvellous."***

> *"From the start of the process to the end of installation I could not fault it. I received help every step of the way. I honestly hope that there will be others who received this excellent help. You have made my life so much easier not only health wise but financially. Thank you."*

> *"Being a private tenant, I believed this would exclude me from this scheme. I was so wrong. All the staff involved took the time and effort to explain the scheme and the processes they would be using. The staff who completed the work were first class and knew their jobs and worked hard to complete on time."*

> *"It is so lovely to come home to a warm house. And so easy to put up or lower the temperature at the turn of a dial. I have just spoken with my supplier and they told me my electric bill from 31/10/19 to this AM is only £33 - hard to believe as it was £400+ last time. I am so thrilled."*

> *"We were not prepared for the disruption i.e. pulling up carpets and flooring is difficult when in poor health. However, it got done and once carpets were replaced and the wood it looks very nice, so I would recommend whoever has it done, get someone who can help with getting the house ready and helping put things back afterwards. I would recommend if you are in a position of needing help to get central heating to apply for this scheme. We cannot really thank you enough, we are so grateful."*

> *"Best thing I've ever done having new gas boiler and radiators fitted. You have made one disabled war veteran a great deal better off."*

> *"The best thing that's happened to this house."*

However, some participants did note issues that they had experienced either following their installation or as part of the process. One, for example, noted the difficulties they had experienced with regards to getting a gas meter: ***"The hardest part of the scheme to get sorted out was to get a gas meter installed."***[19] Another participant described issues they had faced following the removal of their previous heating system: ***"Because of the economy electric system this house has two MPAN numbers, 1 is now obsolete and I've been quoted £800+ to have it removed."*** Project advisors worked with this participant over the course of a number of months to resolve the issue, highlighting the importance of making ongoing support available to those that need it after measures have been installed.

Other respondents described how they had been stressed as a result of the disruption around the installation. However, once their system was in and working and works were completed, they were happy. Their comments highlight the importance of making budgetary space available during the process of delivery to support households through their installation journey in order to ensure their continued participation and avoid undue stress or worry. Meanwhile, some felt that the installers had left too much mess behind, such as fragments of plaster work or fingertip marks on the walls. Another participant did not feel that they were as careful as they could have been with her fragile possessions. Whilst the installers themselves were felt to be 'nice' workers, and the participants were pleased with their new system, the mess made during the installation process did cause some stress and annoyance.[20]

Overall, however, participants were generally thrilled to have their new gas central heating systems installed: ***"I feel so grateful for the help and kindness I encountered during the whole process - this is the best present I have ever received."*** The fact that it was delivered at no cost to the household meant that those who would otherwise have been unable to benefit from support could now do so. Participants described the life-changing nature of the help that they had received, expressing gratitude, relief, amazement and a sense of joy: ***"I just wanted to say I am so grateful. It's been such a gift and it's made such a difference. It really, really has. Every time I switch it on it's like saying 'thanks' again. So, I'll always feel that gratitude. You know, I'm amazed really."***

19 Difficulties associated with this process and the support needs of vulnerable households are described in detail later on in this report.

20 Later sections of this report describe in more detail the steps that were taken by the project team during delivery to monitor the standard of work being carried out.

Participants pointed out that they would not have been able to pay for the necessary works themselves as they simply did not have the funds available to them (for example, they did not have enough savings to cover the cost): ***"If I had had to pay for it [the gas central heating], there would have been nothing left in the kitty. But, as it is, I've got enough to keep me going. When you get to this age, you are on pension credit, you are not going to get a rise...It will have to do me for the rest of my life."***

> *"I had a brain haemorrhage and I easily get flustered and mixed up with things like that, but I didn't have any problems at all."*

The patience and skill of advisors and those managing the scheme was highlighted by participants who appreciated the time taken to guide them through the process in ways that were appropriate to their needs. This was particularly important for households with health problems and who had been unwell or in hospital during the run-up to their installation and, indeed, after it: ***"You talked me through every step of the way, and even the aftercare as well. You really are doing a damned great job."*** This again emphasises the importance of having the capacity to provide tailored guidance to vulnerable households with complex needs during all stages of a project, ensuring that they feel informed and supported each step of the way: ***"I had not been well, and it was all just a bit much for me. But they were very sympathetic, and when the advisors came out they were very nice. Put my mind at rest."***

For some, the installation of their new gas central heating system was equated with major improvements to health and to life more generally: ***"I want to tell everybody thank you very much. You've sort of saved my life a little bit."*** We were also told: ***"The scheme has just literally changed my life...The improvement in my health has changed my life."*** Through such reflections, participants emphasised the co-benefits that they had experienced as a result of their participation in the scheme, relating to warmth, wealth and health.

> *"What you have done here for me, it's been fantastic. It's the best thing I ever got done, because if I hadn't gotten it done, I'd be sitting here freezing now. I'd have no money in the bank and I would probably owe [my energy supplier] a fortune. You've been fantastic. It's made my life a whole lot better."*

> *"My experience is that it has improved my health, it has improved my wealth, so therefore it has improved my mental health...I don't have to worry about money and having the bad coughs and things like that. Yes, you have done good."*

What difference did the scheme make?

This section has highlighted the lived experience of participants trying to make do with solid fuel or electric heating systems at the same time that they were struggling to make ends meet on low incomes and attempting to cope with physical and/or mental illness. It has highlighted the difficulties that can occur when it comes to managing such systems, and the minute day-to-day planning that is required if households are to achieve a modicum of thermal comfort and adequate water temperatures. It has shown the challenges associated with supplying a solid system with fuel, and the futility of trying to stay warm in a home without a working or sufficient heating system. It has revealed the sorrow of trying to live (even survive) in cold or freezing temperatures at home, and the immense difficulty of managing small household budgets to ensure adequate warmth. It also highlighted the coping mechanisms that people resort to when they simply cannot afford to heat their home or pay for their energy. We heard stories of social isolation, hunger, stress, worry and guilt. People suffering with physical and mental ill health saw such conditions worsened by being cold at home, or saw their financial resilience diminished as a result of reduced incomes and higher heating or hot water requirements. Family members struggled to cope with meeting the needs of those who were ill as well as their own, and could feel trapped by trying to manage life on a low income and cope with inefficient, non-existent, high cost or difficult-to-manage heating systems.

At the same time, throughout this section, participants themselves brought hope for the future into their narratives. By imagining a future with gas, they not only pictured a new central heating system but fantasised about having lower energy costs, being able to access instant heat and hot water, having control over a system that was easy to manage, and seeing some physical or mental health conditions alleviated, or their ability to cope increased.

So, what difference did it make?

Home heating and control

- Before receiving support, 75.7% of participants were either unsatisfied or very unsatisfied with the temperature in their home. One year after, 100% were satisfied or very satisfied.
- Before intervention, over half (59%) were not satisfied with how easy their heating system was to use. Within a year, 100% were satisfied or very satisfied.
- Almost three quarters (73.6%) were either unsatisfied or very unsatisfied with the amount of control they had over their heating before receiving support but, again, 100% were either satisfied or very satisfied afterwards.
- Whilst nearly two thirds (63.7%) were not satisfied with how well their house kept the heat in pre-intervention, post-intervention 85.9% were satisfied.

The home heating and control experiences of participant households had dramatically transformed for the better following the support that they received, and the positive benefits continued to accrue and endure well after the initial period following the installation.

After receiving support, participants described how their new heating system meant they could achieve a better level of warmth at home, when they needed it. This came with improved control, allowing heating use to be tailored to individual need and removing the physical burden of managing a solid fuel system. Homes were transformed from cold and often miserable places, to places of comfort and warmth. Participants felt more liberated within their home, free of the chains of fleeces, blankets and shawls that were previously needed to stay warm. It meant households could use areas of the house that they had previously abandoned. Not only did this increase the space available to them, but transformed everyday practices such as now being able to eat as a family at the dining table, cook proper meals in a kitchen or using spare rooms as areas to pursue hobbies. People could now occupy their home as they would want to, transforming properties from places of having to manage and adapt life to the tyranny of a heating system, to a home where they were freed from the restraints of feeling cold. There were wider social benefits to having improved thermal comfort at home, with ramifications for education and learning as well as facilitating the potential for those with additional needs to fully participate in society. However, it remained essential that households be able to access adequate advice and support following their intervention, to ensure the benefits brought by the switch to gas were not limited by issues such as existing fuel debt.

Keeping warm at home

- Before receiving support, 93.1% of households were in subjective fuel poverty
- Within a year, 95.1% of participating households were not in subjective fuel poverty
- One year on, 100% of participants were satisfied with their new gas central heating system
- Of these, 61.9% were happy with how much the system cost to run; 85.7% said that they were happy with how easy it was to control; 88.1% were satisfied with the level of heat provided; 50% were satisfied with how the system looked and/or its cleanliness (cosmetic reasons)

The combination of receiving a free gas grid connection and gas central heating system, alongside dedicated support and tailored energy efficiency advice, was successful in dramatically and significantly reducing the experience of subjective fuel poverty amongst vulnerable households suffering from cold-related ill health.

After their new gas central heating systems were installed, households described the transformations that had occurred in their ability to achieve adequate warmth at home, and the dramatic changes that they had seen to their energy bills following the installation of their new heating system. As such, people could now feel more connected to family and friends, able to focus on other things when they visited, rather than being ashamed of how cold and unwelcoming their homes were. For some, getting out of bed was no longer a dreaded ordeal, now that they knew they would have a warm and comfortable start to the day.

People now felt that they heating systems were easier to manage. Those who previously had solid fuel systems especially were keen to emphasise the sense of freedom and relief that they now enjoyed after no longer having to carry heavy fuel or clean out dirty systems. Not only could this improve mobility, reduce the risk of falls and the exacerbation of joint pain, but could furthermore alleviate worries that the toxicity of the fuel they were using was affecting their respiratory health. In turn, the effects of such benefits could impact upon mental health by enabling a sense of improved wellbeing.

The relief of having more efficient heating and hot water systems that were easy to manage was further reinforced for some by a sense that they had now been able to escape the 'danger' posed by their previous heating system; whether as a result of no longer breathing in toxic fumes, avoiding hot fuel being spat out, or having access to improved sanitation.[21]

Some households took a little longer than others to adjust to their new heating systems but, ultimately, participants were happy with their new systems across multiple indicators. Where households indicated dissatisfaction with their new heating system at the 1-3 month stage, the issue was flagged by the Research Team with NEA's advice team who re-visited to property to ensure households understood how to manage and/or control their new system and were on appropriate tariffs/payment methods, as well as looking to identify and remedy as far as possible any issues that may have arisen following the installation itself. Such support was important to ensure participants were able to make the most of their new gas central heating systems, and that they would not suffer detriment as a result of not knowing how to switch tariff or change an Economy 7 meter, for example.

Access to, and management of, hot water

- 90.7% of participants felt that it was now easier to heat enough hot water for their needs at home.
- Over two-thirds (68.3%) felt that it was now cheaper to heat enough water for their needs at home, and over a quarter (26.8%) neither agreed nor disagreed.
- 91.2% of those that previously had solid fuel systems said that heating water in summer or when it was warm outside no longer made their homes too hot
- Over a third of households now felt that they used more hot water than they did before (34.9%), and 23.2% felt that they did not

Households were more able to affordably and easily access enough hot water to meet their needs, post-intervention. Having improved access to hot water meant that participants were able to make bathing and hygiene related decisions based on preference, rather than according to the limitations set by their hot water system. They could also more easily and quickly access the hot water that they needed. Not only did this lead to a greater sense of convenience, it provided a sense of relief for those who needed regular and dependable access to hot water for the management of health conditions. Participants described how having a gas boiler had improved how they were able to manage hot water needs over the summer, without having to simultaneously over-heat their property or spend money on extra fuel. Others highlighted how having a gas combi boiler had enabled them to reduce waste in terms of heating up water that they didn't need.

However, some households could benefit from clearer information before their installation takes place with regards to what might happen to the speed with which hot water travels through their system. Those who are on a water meter may require additional advice and around water efficiency and how to access water poverty support, should they struggle with their water bill.

21 It should also be noted that, whilst the research was completed in 2020, this was before the onset of the global COVID-19 pandemic. However, the provision of gas central heating to households (in place of solid fuel systems) will have meant that such households could avoid the need for solid fuel deliveries in this period. Given the health conditions of some participants that may subsequently have been shielding, this could have been of great benefit to them.

Bill affordability

- Before receiving their new gas central heating system, 69.9% of respondents said that they either found it fairly difficult or very difficult to afford their energy bills. A quarter (25.3%) found it either very easy or fairly easy.
- By the time 9-12 months had passed, 77.8% of respondents said that they found it fairly or very easy to pay for their energy bills, and only 16.7% found it fairly or very difficult.
- A year on, almost half felt that their energy was more affordable (47.6%) and 16.7% said that it cost about the same. For 11.9%, bills were less affordable.
- Before their new gas central heating system was installed, 74.2% of participants said that they would have their heating on lower or less often than they would like so that their bills were not too high, either all/most of the time or some of the time. This reduced by almost a third to 51.9% at the 9-12 month stage.
- The proportion of households that were going without electricity all or some of the time because they could not afford top-up their PPM decreased by almost half, from 25.4% before intervention to 12.9% one year after.
- The majority of participants had also been heating fewer rooms than they would have liked so that their energy bill was not too high, pre-intervention (81.9%). This had reduced to 27.9% a year after the intervention.
- Before intervention, two-thirds (66.3%) of participants were not buying essentials such as food and clothes so that they could pay their household bills. This reduced by more than half to 32.5%, 9-12 months afterwards.
- Before intervention, 61% of households agreed to some extent that they often worried about paying all of their household bills on time. By the time 9-12 months had passed since they received support, this had reduced to 34%.
- 62.6% of participants had agreed to some extent pre-intervention that money was one of their biggest worries. After 9-12 months, this had dropped to 50%.
- Pre-intervention, just over a third of respondents (35.4%) agreed to some extent that their energy bills were manageable. After 9-12 months had passed, this had more than doubled to 76.8%.
- Before, 34% agreed to some extent that their household budget was manageable, and this almost doubled to 67.4%, post-intervention.

The project was successful in enabling greater access to more affordable energy, or it at least did not increase bills, for a large proportion of participant households. Some, however, were still experiencing financial difficulties. This could relate to such households paying more for their gas than they did their previous fuel, or that they were now consuming more energy than they did before due to improved performance or controllability in their new heating system. It may also relate to continued wider financial vulnerability of the household. In general, however, reduced or stable costs, improved access to dependable and controllable heat, and increased predictability of payments combined to result in positive financial outcomes for participants.

The proportion of participants resorting to the rationing of their central heating, going without electricity on their PPM, heating fewer rooms in order to save on their bills or not buying things that are really essentials (like food) had been greatly reduced following the provision of energy efficiency measures and advice-based support. However, results also indicate continued financial vulnerability amongst some households who were

obliged to continue to implement coping strategies in order to effectively manage their household budget, at the same time that they perceived heat as being more accessible and/or affordable as a result of their new system. As such, the alleviation of subjective fuel poverty may not generally equate to an alleviation of wider poverty and the complete eradication of rationing practices (often described as 'frugality') at the same time that it can make coping with wider challenges easier and life more comfortable in some aspects.

Post-intervention, participants described how reductions in the cost of their energy meant that they now felt able to have the heating on higher and more often. Having that bit of leeway introduced into household budgets as a result of energy savings meant households could now buy essentials that they previously would have gone without. Some had been able to reduce their energy costs (will still staying warm at home) to the extent that they were able to make considerable savings. Such experiences had a transformative effect on their lives, enabling a sense of financial independence, self-reliance and of no longer living or surviving on the brink. The relief caused by greater financial savings in turn created benefits to mental health, with participants describing themselves as having a sense of contentment, security and, indeed, empowerment. It meant that people did not have worry about falling into debt, going without heating, food or other essentials, or having to resort to borrowing money from friends and family.

Overall, the scheme was successfully able to reduce financial worry amongst participants with regards to the management of household budgets and how able they were to pay their bills, though a degree of worry did remain for a proportion of households – this was likely linked to their wider financial vulnerability and circumstances.

Impact on cold-related ill health

- Pre-intervention, only 13.7% of participant households rated their physical health as either good or very good, and 37% rated their mental health as such.
- After 9-12 months, 74.4% now rated their physical health as good or very good and the proportion of households that rated their mental health as such remained stable (78.6%).
- Post-intervention, half of respondents felt that their health had improved to some extent (50% at the 9-12 month stage). After 1-3 months 7.9% of respondents felt that their health had improved 'a lot', but after a year this had increased to 20%.
- Just under half of participants reported as having experienced no changes to an existing health condition at the 9-12 month (45%) stage.
- One year on, over half (51.7%) felt that any changes they had experienced were either very probably or probably linked with the support they had received. Another fifth (20.7%) felt that they could possibly be linked. Just over a quarter (27.6%) felt that they were either probably not or very probably not related.
- Pre-intervention, 82.7% of participants agreed or strongly agreed that aspects of their physical health were affected by being unable to keep warm at home. However, this had reduced to 7.2% after 9-12 months.
- Before receiving support, around half (48%) of participants felt that aspects of their mental health were being affected by being unable to keep warm at home. This had dropped to 4.8% one year afterwards.
- Whilst almost three quarters of respondents (73.2%) said that their ability to cope with existing illness was affected being cold at home before intervention, this was reduced to 4.8% (after 9-12 months).

Post-intervention, participant households were more likely to perceive themselves as being in good physical and/or mental health, were likely to feel that existing conditions had either improved or at the very least not worsened, and that to varying degrees they were likely to possibly, probably or very probably link observed changes to health with their new central heating systems. The fact that participants were less likely to feel that they were cold at home and that this had a corresponding impact upon on their health and wellbeing after the intervention provides further indications that the project was successful in significantly alleviating the physical and mental health impacts of living in a cold home for participant households, as well as improving their ability to cope with existing illness. In addition, improvements continued to be seen up to a year after households had received support, suggesting that the health-related benefits of such support could accrue and endure over time.

Those who had to be at home for extended periods and who needed to feel warm at home because of their health conditions felt more able to affordably achieve adequate levels of thermal comfort. Limitations on their mobility were easier to manage. Older participants with chronic respiratory conditions reported an easing of the symptoms associated with their illness and participants with young children would highlight the positive changes they had seen to their respiratory health. This was often linked by participants with improved air quality, reduce damp and mould and increased thermal comfort. Improvements to mental health were often associated with increased feelings of comfort and a sense that someone's home was now 'on their side' and no longer impeding every day activities like cooking, cleaning, washing and drying. They were also linked with feeling warmer and happier at home, and with being able to access hot water whenever it was needed. For some, improved mental health came with reduced stress and worry about how and when they were going to pay for their fuel. Having reduced heating costs had helped them to enjoy a greater sense of mental wellbeing due to not having to worry about their finances as much, or the decisions they might have to make in order balance budgets. One of the wider ramifications of improvements to mental health resulting from improved thermal comfort and financial wellbeing were that some participants felt more empowered to address other areas of their lives that had also been causing them distress, such as high water bills. For others, it enabled them to enjoy more time with family members and friends, reducing their sense of social isolation. Changes to how their heating system was controlled meant others could feel more comfortable in the face of existing illness – without their heating system adding additional distress and discomfort.

Scheme satisfaction

- 97.5% of participants were either satisfied or very satisfied with the process of signing up for the scheme. The remaining 2.4% were neither satisfied nor dissatisfied.
- 100% of participants said that they were either very satisfied or satisfied with the experience of having their home connected to the gas grid and gas central heating system installed
- With regards, to the quality of the works carried in their home, 95.1% were either satisfied or very satisfied, whilst 2.4% felt neutral towards it. 2.4% said that they were dissatisfied.
- 90% of respondents said that they were either very satisfied or satisfied with the energy-related advice that they received, and no respondents were dissatisfied with it.

Overall, there were very high levels of client satisfaction amongst scheme recipients regarding each stage of their Connecting Homes for Health journey. Households would often link their sense of satisfaction with the scheme with the health-related and financial benefits that they had experienced. As such, they would

often express a sense of overwhelming gratitude and state that the scheme had changed their lives for the better, or that their decision to participate in the scheme had been the best decision that they had ever made. The patience and skill of advisors and those managing the scheme was highlighted by participants who appreciated the time taken to guide them through the process in ways that were appropriate to their needs. This again emphasises the importance of having the capacity to provide tailored guidance to vulnerable households with complex needs during all stages of a project, ensuring that they feel informed and supported each step of the way.

Some participants did note issues that they had experienced either following their installation or as part of the process, and their comments highlighted the importance of making budgetary space available during the process of delivery to support households through their installation journey in order to ensure their continued participation and avoid undue stress or worry. They also highlighted the importance of implementing appropriate quality control procedures at each state of project management.

Overall, however, participants were generally delighted to have their new gas central heating systems installed. The fact that it was delivered at no cost to the household meant that those who would otherwise have been unable to benefit from support could now do so. Participants described the life-changing nature of the help that they had received, expressing gratitude, relief, amazement and a sense of joy.

The Connecting Homes for Health pilot scheme can therefore be said to have achieved significant benefits for vulnerable households in terms of reducing their risk of subjective fuel poverty and in alleviating cold-related ill health. This indicates that the application of the health-based and financial eligibility criteria and targeting mechanisms (developed during the first phase of the scheme) to the provision of gas grid connection procedures and the delivery of energy efficiency advice and support (including the installation of free gas central heating systems) was successfully able to reduce the experience of health and other social inequalities by a delimited group of extremely vulnerable households.

However, it is also important to understand how the delivery pathways developed and enacted during the delivery phase of the project (including the connection of households to the gas grid, the installation of their gas central heating measures and the provision of tailored advice and support) were key in enabling such results to be achieved. This is explored in the next section.

Delivery insights and lessons learned: Identifying replicable pathways of support

This section follows the process of supporting households at each stage of their Connecting Homes for Health journey, from the perspective of the delivery team. It identifies challenges that were experienced as well as examples of best practice. As such, it sets out a series of lessons learned which should be taken into account when looking to set out replicable support pathways. It does so across a number of themes, including: supporting vulnerable and hard-to-reach households (recruitment, timing, landlords and eligibility); project management; paperwork and logistical processes (getting a gas connection and getting a gas meter); and installation challenges.

SUPPORTING VULNERABLE AND HARD-TO-REACH HOUSEHOLDS

Recruitment

The worry of the upheaval associated with having a new system installed represented a real barrier for some people wanting to sign up to the scheme. However, going to the effort of visiting people at home and trying to recruit them face to face meant that the project was able to engage people who otherwise would not have gotten in touch of their own accord. This element of delivery was key to ensuring the research was able to reach and offer support the most vulnerable households who were in most need of help; those identified through the area mapping.

Retaining the original eligibility criteria and keeping to mapped target areas as far as possible meant the team was dedicated to finding ever-more creative solutions to help those most hard-to-reach participants, rather than widening eligibility and helping those who were easiest to engage (i.e., those who approached the project of their own accord and who respond to written communication) and resorting a much wider geographical range to bring in the numbers.

In reality, this meant repeated letters, repeated phone-calls, text messaging when phone calls were not effective, arranging face-to-face home visits, door-knocking, private and social landlord liaison, managing communications with the local council, parish councils, taking on board the processing of FPNES paperwork, organising and carrying out house clearances and storage space, coordinating the provision of small measures such as carpets and curtains, identifying and booking adequate interpretation services and making onward referrals to other agencies able to provide additional support for multiple vulnerabilities.

Making the effort to visit 'tricky' households who were unresponsive to written or telephone-based communication meant the project team could build trust and rapport with participants who were suffering from multiple vulnerabilities, and who had extremely complex lives. Such face-to-face visits provided an opportunity to fully understand individual household situations and their needs. In one instance, a member of the team visited a household who had failed to return any of the required paperwork after initially reaching out to the project. Upon entering the property, it became apparent that the participant struggled so much with her mobility that she was completely housebound. Her living-room was filled with opened and unopened mail, and the project paperwork had been lost in-amongst it. By taking the time to complete the paperwork

with her in person and engaging a family member at the time of the visit, the team was able to secure her on-going participation in the project. Additional considerations also needed to be made for those participants with mental ill health. Such clients needed to be caught on a 'good day' if they were to answer the phone, come to the door or return/look for missing paperwork. As such, repeated engagement attempts and an understanding of their individual needs and conditions was required – this was achieved mostly through face-to-face work. Such households needed extra time and effort to be spent to support them in progressing through each delivery stage (be it completing and returning paperwork, liaising with the partner GDN about gas connections, liaising with their landlord, or preparing and clearing properties for heating systems to be installed, for example).

At times, the application of a small crisis fund meant that the project was able to retain the participation of households, who would have otherwise fallen by the wayside. Importantly, the retention of such households was achieved by spending relatively small amounts of money. The key factor was in staff taking the time to understand the barriers facing each individual household, and creatively seeking out ways that would remove that barrier. For instance, in one property the laminate flooring had been glued down and would have to be removed before internal pipework to be carried out. Paying towards replacing the laminate flooring with carpet and thermal underlay meant that household was happy for the works to go ahead. In the case of a hoarding household, where the property was so full it had to be emptied before any works could happen, the project paid for a skip whereby the participant was able to clear the house with the help of her relatives. In another property where the householder wanted to lift the flooring in one room, the project was able to source a van to take the flooring to the tip. Other households had different needs still. For example, one participant who had escaped from an abusive relationship was living alone, had very poor English skills and no support network. The team managed to identify a local interpreter and visit the household with them. This meant the participant fully understood the project, was able to explain her situation and needs and organise the relevant paperwork. The crisis fund also meant that a participant who suffered from COPD was able to avoid the risk to her health posed by staying in a home where installation works were taking place by paying for her to stay at a local hotel for two nights.

Timing

It was noted by the project team that more people wanted to sign up for the scheme over the winter period, rather than before it. It was felt that this was due to energy demand, and the inadequacy or expense of their heating systems, becoming more visible at this time. This then compelled them into seeking the support that they may have put off 'for another day' in the autumn. During one cold snap in February, in which it snowed over the course of one morning, the team received multiple calls asking for support. As a result, they were able to sign up seven new households to the scheme. Indeed, there was a suggestion that scheme targeting can be more effective when carried out over the whole winter period. However, this presents a challenge in terms of delivery timescales, given that Warm Home Discount Industry Initiatives projects need to be completed by the 31st of March. This means there is a discrepancy between periods of high recruitment and required delivery timescales.

Nevertheless, recruitment over the winter period brought to light emergency cases that needed to be fast-tracked through the scheme i.e. households that could not or should not be left without heating and/or hot water during a cold spell. Future delivery would therefore need to consider how such priority mechanisms can be built into scheme delivery.

Landlords

Another barrier in delivering support to some of the most vulnerable households was in the attitude displayed by a few private landlords. Whilst tenants were keen to sign up to the project, some private landlords refused permission, claiming they did not want any damage done to flooring or decoration. When the team offered to compromise through the application of the crisis fund, the landlords were adamant that only the most expensive solution, or inappropriate measures, would do. In one case, a landlord requested new flooring and new furniture whilst the tenant flagged that the landlord would be obliged to replace such things themselves anyway as part of their contractual agreement. Another landlord refused to give permission for works in the property, despite the vulnerabilities of the tenant, given that it was recently redecorated. The fact that the property was already an EPC D meant the team were unable to use MEES (Minimum Energy Efficiency Requirements in the Private Rented Sector) as leverage. Whilst some landlords agreed to the works in principle, they delayed signing the relevant paperwork and permission slips for weeks or in some cases months, jeopardising the potential for their tenant to receive support through the scheme.

Eligibility

It became apparent during the recruitment phase that households faced challenges in being able to demonstrate proof of income. Households who may not have had a payslip were not sending anything, rather than opting for alternative such as a copy of a bank statement. Others who did not have paper-based statements were not returning paperwork as it meant hassle, cost and required an ability to get to a place where they could download, print and post it. Some who did get paper statements had to wait a month for their next one, as previous statements had been lost. One solution found by the team was to ask for a copy of a bank statement showing a month's worth of transactions, or to offer households the option of sending photographs and screenshots of their evidence. At other times, only a face-to-face visit would suffice.

Limiting the income threshold to £21,000 net annual household income meant that the scheme was able to get to the people who were living on the lowest incomes. However, complexities emerged when households who were above this income threshold had more than one or two people living in them and were struggling to make ends meet or to save enough money to be able to replace a heating system themselves. Clearly, they were living in homes that were cold, and living with mental or physical ill health. At the same time, households with more than one or two people living on less than £21,000 were in situations of even greater need. It became extremely difficult for the team to make yes/no decisions based on a static income threshold.

Similarly, the team came across a number of older person households that qualified based on the income and health criteria, but who had large amounts of personal savings. Often, such people were suffering in a cold home with inefficient or non-existing heating systems. However, they were unwilling to spend part of the savings that they had built up on improving their home heating. They did not want to reduce the inheritance that their children might receive or counted on their savings as a 'survival fund' should they find themselves in financially reduced circumstances. They did not view investment in a new heating system as something that would add value to their property given low or decreasing house prices in the communities in which they lived, and investment for purposes of comfort alone could seem alien to such household. One woman who had been medically retired did not qualify for welfare support due to her personal savings. She was therefore having to live off her savings. Only when they became so depleted would she qualify for welfare support.

Looking at guidance such as the Minimum Income Standard or the Social Metrics Commission's new measure of poverty for the UK was not helpful in developing a staggered approach to eligibility that took into account household composition, situation and need, given that such metrics are based on complex national data sets (and intended to measure national progress) that are difficult to translate to a practical and individual applications. Similarly, ECO Flex eligibility statements that were reviewed either did not take such a staggered approach or provided little justification for any variations in income or savings thresholds that had been included. Indeed, it is precisely for this reason that eligibility proxies (such as being in receipt of benefits) have been used for so many years in fuel poverty scheme targeting.

A similar challenge was encountered when it came to judging how far a household qualified under the health-based eligibility requirements for the scheme. Whilst some households had diagnosed health conditions, others presented a much more complex picture. One household that contacted the scheme did not have any members with a health condition or who were ill. However, there was a new-born baby living in the property (which had no working heating system). Given the risk that the situation presented to the health of the baby, the family were accepted onto the project as a preventative step, to reduce the likelihood of that child developing a cold- or damp-related health condition in the future. However, this meant that 'improvements' to the health of the household or for that child were unlikely to be recorded by the project, given the preventative rather than curative/alleviative intervention. The qualification of a household for support based on whether they represent a population group 'at risk' of cold-related ill health would be in line with public health actions to prevent future health inequalities. However, qualifying households on the basis of population group membership alone (without the presence of an existing health condition) limits the extent to which impact on physical or mental health and/or wellbeing, or ability to cope with existing illness, can be demonstrated. As a result, the building of an evidence base for such support to be delivered (and funded) in the first place is then jeopardised.

At other times, the way in which households thought about illness could affect how far they considered themselves eligible for the scheme. In a number of cases, households denied that they had a health condition or were in ill health only to reveal, after further probing by the project team, that they had a child who was often at the doctors because of a bad chest, or that an elderly person had joints that ached when it was cold or couldn't move around much. The team therefore had to be flexible and creative with regards to how they discussed the health of a household at point of recruitment into the scheme.

PROJECT MANAGEMENT

A project management system (AdvicePro) was used to ensure that all data for a household could be stored in one place, whilst their progress against the 24-step delivery checklist could be recorded and monitored, and any notes from partners or communications from households saved.

PAPERWORK AND LOGISTICAL PROCESSES

Getting a gas connection

A major challenge at the start of the project related to confusion around the process for securing a gas grid connection for participants. At the commencement stage, the process through which gas connections

would be provided was unclear. The team was later informed that a FPNES voucher code would need to be secured via either an organisation that could make an official fuel poverty/FPNES declaration (in this case, Communitas Energy), or the relevant local authority (initially Durham, later Sunderland) through an ECO-Flex declaration. This presented an additional burden in terms of the paperwork that needed to be completed and signed by households, as well as a time complication. With regards to ECO-Flex declarations, these could take up to two weeks to be returned to the project team, before a FPNES connection request could be submitted to NGN. This was resolved in some cases where the team was able to work with Communitas Energy who, after signing a data-sharing agreement with NEA, could contact a household directly to process their eligibility assessment – this could be completed within ten minutes, and meant the team could avoid the lengthier ECO-Flex applications unless absolutely necessary.

After delays were experienced in the processing of FPNES connections, it appeared that the applications for the project were not identifiable within the system of the partner GDN, who was therefore unaware of which applications needed to be fast-tracked or prioritised – a situation complicated by the fact the applications were processed by the various team members that could pick them up, rather than a named project contact. This meant that it could take up to 20 working days (or four weeks) before a connections quote was sent to a household. However, after this barrier was identified, the partner GDN was able to nominate a named contact within a specific team who was briefed on the project. Future applications submitted under the project were flagged as being for the attention of that staff member, who was then able to ensure those applications were prioritised for processing. This helped to alleviate the risk that a customer who qualified for FPNES and who would otherwise be unable to pay for gas central heating themselves would be unable to get the support they needed in time.

In Sunderland, where the local authority did not yet have a published ECO-Flex declaration, households who were not eligible through the general FPNES/Fuel Poverty Assessment route (but who met project eligibility criteria) were unable to qualify for a connection under FPNES (as the team could not show that they were considered to be in or at risk of fuel poverty by the local authority). This meant the cost of their connection had to be met by the project, representing an additional and unanticipated cost burden. Problems with regards to funding the gas grid connections through the FPNES also arose when changes to the partner GDN's pricing structure meant that the value of FPNES vouchers did not fully cover the cost of some connections. Ofgem rules did not allow WHD Industry Initiatives funding to plug the gap, and so funding for those connections had to be sourced by the delivery team from within NEA.

An added complication to project management related to the varying communication routes with households taken by different project partners. For example, to process an FPNES application, an online form including a household contact address was required by the partner GDN. This, however, meant that connections quotes were sent directly to a household who had to either accept or decline the quote with NGN directly. Not only did this process require further communications by the project team to assure households that the cost of their connection would be covered by the project, but meant that installations could be delayed should a household (who we already know was likely to be vulnerable and with additional support needs) be sitting on their paperwork. Eventually, this challenge was resolved by an NEA project manager who was coordinating the interventions, entering her own contact details into the form, which meant that she was able to receive and accept the connections quotes as they came in. However, a remaining barrier related to getting landlord permission for the connection. In such cases, quotes had to go to households who were expected to get in

touch with their landlord, secure permission, and have the landlord send the relevant paperwork back to the partner GDN. Maintaining such a positive communication chain amongst such vulnerable households and sometimes 'difficult' landlords was unlikely in most cases. The partner GDN, however, was unable to contact the landlord directly as a result of GDPR limitations, and so the project team had to spend additional time chasing for landlord consent.

The extra time and effort displayed by the project team in recruiting and retaining the participation of vulnerable, hard-to-reach households was similarly displayed in their attitude towards securing gas connections for 'hard-to-connect' properties. In three cases, complications arose when land that would need to be dug to lay gas pipes crossed private property, and permission to work on the land had to be sought. In one case, this meant assuring a landowner that any turf removed would be replaced. In another, a mistake in the land registry plan meant that one householder had a patch of grass in their front garden that did not actually belong to them. Whilst this meant ownership lay with the local council, they did not acknowledge said ownership, meaning permission to dig could not be gained. Luckily, in this case, there had been a historic supply running to the property with an existing pipeline. That meant that, in the end, permission to lay pipes across the land in question was no longer needed. In another two cases, historic supplies to the property were discovered after works to lay pipes began, (the pipes at one were partly concealed). Those supplies had not been identified through initial searches, which involved looking for an existing MPRN (Meter Point Reference Number), and it was unclear how such a situation could be avoided in future via additional checks or surveys, or whether such a process would be feasible. In another case, the landowner of a piece of grass would not give permission for digging works to lay pipes from one side of the land to another without an easement (which came with corresponding solicitors' costs and admin time). In the end, the team identified a property with an existing gas supply further up the estate but on the same side of the street. This meant the pavement (a Council Highway) could be dug without any permission needed, and without having to cross the land in question.

Some properties recruited into the project had previously received a gas connection through the FPNES as part of the DECC Central Heating Fund (CHF). Despite the GDN receiving assurances that the complementary gas central heating system would be installed, therefore complying with their obligation, the commitments made under the CHF to install a gas central heating system were not fulfilled in some cases. The GDN identified and made the project team aware of the challenge and opportunity for the Connecting Homes for Health project to support these households by bringing alternative funding (in this case through WHD) to support the gas central heating installations. Despite the positive outcome in this instance, this points to an apparent policy misalignment between the FPNES and funding streams like the former CHF or WHD II. This misalignment may have resulted from restrictive delivery timeframes and/or the consequences of stop-start funding streams for the provision of energy efficiency measures, and highlights tensions that can lead to a misalignment with more consistent forms of support, such as the FPNES.

Getting a gas meter

Challenges were encountered with regards to identifying whether a household had an MPRN, as well as in securing a timely gas meter installation and MPRN allocation. Whilst the responsibility of doing so lies with an energy supplier, the process was incredibly complex with multiple organisations attributing responsibility to others. Through a stroke of serendipity, a member of the project team had permission to access Exo Serve

(the system where all the MPRNs are registered), to see if a property had an MPRN, whether it was a live account, and whether there was existing gas pipework there (although this does not always show on the system). That meant the team was able to speed up the initial part of the process.

However, the team came across further barriers when it came to getting a gas meter installed at a property. Energy suppliers who had commissioned the WHD Industry Initiatives element of the project quoted up to 3 months or more for getting a meter installed through them, and even when the team explained that the project was one commissioned by the supplier, the relevant team within the supplier organisation was unable to fast-track the installation. Had the team had to rely on this to get the necessary gas meters installed, the WHD Industry Initiatives delivery deadline would have passed before the installations could be completed. Instead, a company called Citrus Energy was identified who, as part of their energy advice and switching service, are able to secure first time gas meter installations by comparing deals and installation timeframes between different suppliers. Bringing an external partner on board meant that the project was then able to secure a turnaround time of 10 days to get gas meters fitted. If working in this way meant that the household wasn't able to get the best energy deal on the market, the team would later switch them once their meter and new system was installed. However, this did mean that households risks facing higher than necessary energy bills once their system had been installed should there be a time delay in supporting and enabling them to make that switch.

INSTALLATION CHALLENGES

A challenge that was encountered when installation works first began was related to the quality of works that were being installed. For example, in one household, pipework ran down the middle of the wall, hadn't been boxed in and ran across skirting boards and dado rails. In one case, the installers had drilled through a wall rather than go under floorboards. After a member of the project team visited the householder to deliver a post-installation advice visit, issues with the work were noted and fed back to the installer, who was required to return to the property and rectify the issues.

Indeed, amongst some installers working on the project there was a sense of judgement and censorship towards households, whereby installers themselves were trying to decide who were the 'deserving' and 'undeserving poor', and displayed an attitude that charitable works could be carried out to a lesser standard since they were seemingly 'free' (even though the cost of WHD is recouped through consumer bills). Following this, installers were told that the quality of installation in every property would be checked: before and after photos were subsequently provided for works carried out. However, the value of working with installers who understood or were able to be flexible in relation to the vulnerabilities of households was demonstrated in a particular case, where a participant had a child who was living with autism. On the day the new system was due to be installed, the child became distressed at the thought of such a change, and locked both himself and the installer into the property, and threatened to disrupt the installation by extreme means. After the police and social services were called, the child was safely removed from the property. Whilst the installer had had to lock himself in the bathroom during these events, he agreed to return to the property and complete the job, acknowledging that this was a household with additional and complex needs.

The team were unable to identify official minimum energy efficiency installation quality standards, and so produced an installation checklist that installers had to use to ensure works were carried out to the highest of standards. Similarly, after some households experienced leaks and burst pipes within their existing pipework once their new system was up and running, installers were further required to run tests more efficiently and effectively once they finished a job. One example of this learning being implemented going forward relates to a case where the installer found a system that had pre-existing lead pipes, and so they dug up all existing lead pipe and replaced it with copper piping.

Recommendations for replicating Connecting Homes for Health pathways

The following table outlines **practical recommendations** for project managers and organisations such as energy suppliers and gas distribution networks **looking to deliver** gas grid connection and energy efficiency support projects to vulnerable households at risk of fuel poverty and cold-related ill health.

Practical recommendations for scheme delivery organisations and commissioning bodies	
Designing schemes to address cold-related health inequalities	Following the public health concept of proportional universalism in tackling health inequalities (such as ill-health resulting from cold homes), project **eligibility criteria should be set in such a way as to target the most vulnerable households in society whilst retaining some capacity for flexibility where individual cases require it.**
	Project commissioners and delivery teams should **make use of existing, publicly available data sets to identify local hotspots that demonstrate the most need across multiple vulnerability metrics.** This might involve overlaying data on fuel poverty and deprivation at LSOA level, Public Health Outcomes Framework (PHOF) or Quality Outcomes Framework (QOF) performance at GP practice level, and property- or LSOA-level energy efficiency data, for example.
Ensuring your scheme can engage those who are most in need of, and most likely to benefit from, support	If future projects are to engage and support the most vulnerable households, and avoid 'cherry picking' the 'lower hanging fruit' (households that are most responsive and easiest to engage), adequate provision needs to be built in to projects to ensure staff will have the time, resource and flexibility that is required to do so. This **must include the facility for staff to provide face-to-face and detailed support to households at each stage of delivery. Creative engagement methods that acknowledge and take into account complex vulnerabilities will be required** if recruitment within target areas identified through preliminary mapping exercises is to be successful.
	Future projects should consider the **use of crisis funds to support households with additional needs** (such as hoarders and those unable to move furniture etc.) due to mobility issues or other health problems. The cost of staff time to manage this project needs to be incorporated into project budgets.
	Offer to **collect evidence from participants in multiple formats** from the start of a project, making explicit the variety of options available to them, including home visits. Consider how health-based eligibility criteria should take into account trips to the doctor or everyday complaints and be flexible in how a 'health condition' is classified when identifying and recruiting scheme participants.

Practical recommendations for scheme delivery organisations and commissioning bodies	
	The use of project management software works best and most efficiently when all project delivery partners use it as their main tool for managing delivery and recording information. As such, training for all relevant staff members is recommended at project outset, to ensure a consistent approach to delivery and information management across all partners. The delivery experience of households can be further enhanced when there is one body helps coordinates activity and interaction with clients.
Understanding partner roles prior to delivery commencement	Before project commencement, there needs to be a clear understanding by each partner of what their role in the project will require. **Each partner needs to not only identify and brief internal pathways, processes and staff members that are relevant to this, but should also brief each project partner with the information. Silent partners (who are not part of a consortium but nevertheless required for elements of delivery) should also be identified, engaged and briefed prior to project commencement,** with any relevant paperwork put in place from the start (such as data-sharing agreements).
	At project planning stage, **all partners with a role in the delivery process (including commissioning partners) should brief relevant internal teams and account for the project when carrying out relevant capacity planning.** Other project partners should be fully informed of the teams and contacts with whom they should liaise and advise of any limitations on capacity or internal processes that could affect delivery within the required timescale as soon as possible, and take/facilitate suitable action to mitigate their impact on the project.
Ensuring smooth delivery of works	GDNs should consider **adding in a section on their portals for landlord contact details** whereby the tenant gives the GDN permission to contact the landlord on their behalf, for purposes of the connection.
	The **staff time to manage the process of laying mains gas pipework for hard-to-connect properties, as well as direct costs associated with legal requirements, should be incorporated into future project budgets.** This is a necessary step in ensuring vulnerable customers with additional needs are able to complete a gas connection customer journey.
	Appropriate quality standards and quality assurance procedures for installation works in homes should be identified and set-out prior to delivery commencement and all installation partners should be made aware of (and agree to comply with) both the standard and the procedures.
	Identifying and understanding **vulnerability training for installers** before project commencement should be considered.

The following table outlines a series of **policy-based recommendations** that would be necessary to **enable and facilitate the future replicability** of schemes like the Connecting Homes for Health pilot, in order to address cold-related health inequalities arising from the experience of fuel poverty.

Policy recommendations to enable future replication of Connecting Homes for Health pathways	
UK Government	First-time central heating support can make an enormous difference to the lives of vulnerable households in or at risk of fuel poverty and cold-related ill health. Benefits such as those evidenced within this report should not be discounted when considering wider policy interventions to decarbonise and/or improve air quality.
	To ensure vulnerable customers at risk of fuel poverty and other forms of deprivation have access to a range of energy-related support that will increase their financial and energy-related resilience, the UK Government should **urgently clarify that they intend for the WHD to continue to be available past April 2021**, helping to mitigate the current uncertainty surrounding the scheme. The UK Government **should also ensure that the next iteration of WHD continues provision for industry initiatives with an increased permitted level of spending for these activities.**
	The UK Government should **ensure that all licenced suppliers** (i.e. with >50,000 customer accounts) **are required to provide all elements of the WHD**, thus increasing the scope of the scheme to address energy-related and financial vulnerability across a larger number of customers who are in or at risk of fuel poverty.
	BEIS should consider how definitions of fuel poverty designed to measure progress against national strategies and targets can **be translated into a useful tool or guidance for judging scheme eligibility criteria at a practical local level,** in ways which take individual household needs, composition and situations into account.
	BEIS and MHCLG must **investigate the compliance rates of the PRS MEES and identify how this can be maximised,** so that no households misses out on crucial energy efficiency improvements. BEIS and MHCLG should also consider how to **encourage landlords who minimally comply with MEES to support vulnerable tenants** in going beyond the minimum energy efficiency requirement for their property where the potential for benefit to tenant health and wellbeing is identified.
UK Government and Public Health England (PHE)	BEIS and Public Health England should consider **how guidance for the targeting of health-based affordable warmth schemes** can be developed using existing evidence and public health theory so as to marry up the need to prevent future ill health with the need to address existing health inequalities.
UK Government and Ofgem	Ofgem and BEIS should consider the **production of minimum energy efficiency installation quality standards** for schemes offering support to vulnerable households.
	Ofgem and BEIS should consider ways that future projects and funding streams can **cover the shortfall between discounts provided through FPNES, variations in local authority ECO-Flex eligibility, and the cost of a gas connection** for fuel-poor households.
	Ofgem and the UK Government should consider how **different energy efficiency funding streams, including the FPNES, WHD II and any future national energy efficiency schemes can be more effectively aligned to ensure households receive the full package of support available.** They should ensure obligated companies are able to meet the requirements placed upon them to the best of their ability. Ofgem must also ensure that **FPNES targets in RIIO GD2 are stretching, allowing for more fuel poor households to obtain a gas connection** that could significantly reduce their fuel bill and/or increase their level of comfort.

Policy recommendations to enable future replication of Connecting Homes for Health pathways	
Ofgem	Suppliers delivering WHD Industry Initiatives must continue to work together with appropriate agencies to make sure fuel poverty support services can **offer energy efficiency measures alongside a holistic advice package** aimed at improving energy-related financial resilience, accessing energy efficiency advice and improving energy-related capabilities. Support provision should allow the **incorporation of debt relief, crisis and hardship funding** for clients in need, where appropriate.
	Ofgem should consider developing a framework for gas grid connection procedures which enable the health impacts of living in a cold home to be addressed, including the adoption of health-based eligibility criteria for the Fuel Poor Network Extension Scheme (FPNES) following the end of the current RIIO-GD1 price control mechanism in 2021.
Ofgem, energy suppliers and GDNs	WHD Industry Initiatives schemes should **trial and reflect inclusive design principles for service delivery** that can address the multiple advice and support needs of vulnerable clients, alleviate fuel poverty and reduce health inequalities, bringing significant added value to the WHD scheme.
	Ofgem and energy suppliers should work to ensure that **required WHD II timeframes for delivery reflect the most appropriate timescale for the delivery of support to extremely vulnerable households**, especially where schemes aim to reduce local health inequalities and alleviate fuel poverty.
	Ofgem and GDNs should work to ensure that the new **"use it or lose it allowance" in RIIO GD2 is effectively deployed to alleviate fuel poverty and reduce health inequalities** amongst vulnerable energy customers.

Potential wider benefits of the Connecting Homes for Health pilot scheme to UK plc

Existing evidence of the financial impact of energy efficiency support	The cost-savings potential of the Connecting Homes for Health Scheme
Cost-savings of tackling cold-related ill health	
In 2016 the BRE estimated that the overall cost to the NHS of poor housing containing category 1 hazards is £1.4bn, with costs to society which includes the medical costs plus, for example, lost education and employment opportunities of £18.6bn[1]. The BRE also found that if all of the English housing stock with a SAP below the historic average of 41 was to be brought up to at least the current average of 51 through heating and insulation improvements, the health cost-benefit to the NHS would be some £750 million per annum[2]. Stafford has calculated that the costs of cold homes to the NHS for: cardiovascular disease was £3,124 per case; for respiratory illness, £4,359; for falls, £2,453 per case; for common mental disorders (CMD), £1,543. These figures demonstrate the potentially substantial costs to the NHS per case of cold-related ill health[3]. Evaluation of the Warm At Home Programme by Sheffield Hallam estimated that the programme had led to 121.8 Quality Adjusted Life Years (QALYs – 1 QALY = 1 year of life in perfect health). This was the equivalent of around £2,436,000 in additional benefits.[4]	Connecting Homes for Health households displayed a high risk of suffering from cold-related ill health and there was often more than health condition present in each household. Results indicate that the scheme was successful in significantly alleviating the physical and mental health impacts of living in a cold home for participant households, as well as improving their ability to cope with existing illness. For example, before intervention, 13.7% rated physical health as either good or very good. Afterwards, 74.4% did so. Similarly, before intervention, 37% rated mental health as good or very good. Afterwards, 78.6% did so. Although 82.7% said physical health was affected by cold at home pre-intervention, only 7.2% felt so afterwards. Before, 48% said mental health was affected by cold at home, whereas after the intervention only 4.8% felt so. Improvements continued to be seen up to a year after households had received support, suggesting that the health-related accrue and endure over time. The dramatic self-reported improvements to health post-intervention give an indication of the extent of financial benefits that could accrue to the NHS and to wider society as a result of such support.
Wider benefits of tackling household debt and increasing personal financial resilience	
Bad debt impacts energy suppliers - increasing the likelihood of supplier failure and overall increasing costs for customers, including those who suffer the debt, adding to the debt cycle[5] . If significant utility debt persists, it will impact on the whole economy, putting a downward pressure on households spending on local goods and local businesses. We have bitter experience of how household debt can negatively impact on the economy via the financial sector.	The Connecting Homes for Health project either made energy bills more affordable or at least did not increase bills for a large proportion of participant households. Reduced or stable energy costs, improved access to dependable and controllable heat, and increased predictability of payments combined to result in positive financial outcomes for participants. For example, before receiving support, 69.9% of participating households found it hard to afford their energy bills. After participating in the scheme, 77.8% found it easy. Similarly, whilst only 35.4% felt their energy bills were manageable pre-intervention, 76.8% did so afterwards. Although only 34% felt that their household budget was manageable before support, 67.4% felt that it was manageable afterwards. Not only does this indicate that households were more able to afford their energy (thereby reducing the likelihood that they would fall into fuel debt), but that the financial resilience and spending power of the household was increased.

1 Roys, M., Nichol S., Garrett, H, and Margoles, S. (2016) The full cost of poor housing.
2 Nichol S., Roys M., Davidson M., Ormandy D., and Ambrose P. (2010) Quantifying the cost of poor housing in England
3 Stafford, B., 2014, The social cost of cold homes in an English city: developing a transferable policy tool, Journal of Public Health Vol.37(2): 251-257
4 Sheffield Hallam University, 2016, Warm, Safe and Well: The Evaluation of the Warm at Home Programme, Centre for Regional Economic and Social Research
5 https://www.ofgem.gov.uk/system/files/_docs/2018/09/appendix_6_-_operating_costs.pdf

	Participants were using more energy (before, 74.2% were rationing their use of central heating at home. This reduced to 51.9% after. Households going without electricity because they could not afford top-up their PPM decreased from 25.4% before to 12.9% after intervention. Before, 81.9% were heating fewer rooms to save money. After, this had reduced to 27.9%. Finally, prior to receiving support, 66.3% were not buying essentials (like food) so they could pay household bills. After: this reduced to 32.5%. It is likely that such increases in household spending power and alleviation of financial pressure had a positive impact on economic spending both locally and in terms of energy supply.
Contributing to the Fuel Poverty Strategy for England	
The Fuel Poverty Strategy for England (2015) sets a target to "ensure that as many fuel poor households as is reasonably practicable achieve a minimum energy efficiency rating of Band C, by 2030".[6] The strategy states that this target is "in line with the activity required to improve the energy efficiency of the wider housing stock in order to meet our carbon budgets". Households that are off the gas grid are 1.5 times more at risk of fuel poverty than those with a gas mains connection, and housing which would be considered hard-to-treat (HTT) accounts for 62millionMt of CO2 emissions each year (the housing stock as a whole accounts for 123millionMt of CO2). HTT properties represent 42% of the housing stock, but account for over half of domestic sector CO2 emissions. Importantly, 72% of the HTT housing stock is off the gas network and comprises dwellings with solid walls.[7]	Through the Connecting Homes for Health project, participants were able to more effectively, efficiently and affordably heat their homes to the required level for comfort and wellbeing. For example, before intervention, 75.7% of participants were either unsatisfied or very unsatisfied with the temperature in their home. One year after, 100% were satisfied or very satisfied. Only a fifth (20.6%) were satisfied with how well their house kept the heat in preintervention. Post-intervention, 85.9% were satisfied. Before intervention, 93.1% of Connecting Homes for Health participants were in subjective fuel poverty. Following the intervention, this had been reduced to 4.9%. Such dramatic improvements to the thermal comfort experienced by participants as a result of reduced costs and improved energy efficiency at home indicate the potential for the project to have both improved property SAP ratings and reduce the risk of HHSRS Category 1 hazards for excess cold indicates the potential of the project to contribute towards meeting the targets set out in the Fuel Poverty Strategy for England (2015)

6 HM Government, 2015, Cutting the Cost of Keeping Warm: A fuel poverty strategy for England. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408644/cutting_the_cost_of_keeping_warm.pdf [Accessed 03/11/2016]

7 Rural Services Network for the Commission for Rural Communities (2010) Understanding the real depth and impact of fuel poverty in rural England.

CONNECTING HOMES FOR HEALTH

Final project report

Action for Warm Homes

NATIONAL ENERGY ACTION
NEA IS AN INDEPENDENT CHARITY, REGISTRATION NO. 290511. COMPANY LIMITED BY GUARANTEE.
REGISTERED IN ENGLAND & WALES NO. 1853927
REGISTERED OFFICE: WEST ONE, FORTH BANKS, NEWCASTLE UPON TYNE, NE1 3PA
WWW.NEA.ORG.UK