

Helix-50 Ltd

CASE STUDY

Jigsaw Homes

The Problem:

We were approached by **Jigsaw Homes** to help tackle the ongoing battle of fuel poverty. Fuel poverty is the condition of being unable to afford to keep ones home adequately heated, a household is in fuel poverty if it needs to spend 10% or more of its income on energy to maintain a satisfactory heating regime. Consequently, following the persistent rising energy costs; tenants at Jigsaw Homes were faced with a choice – heating or eating?

How Is Fuel Poverty Measured?

The government measure fuel poverty using the **Low Income Energy Efficiency (LILEE) indicator**. Under the LILEE indicator, a household is considered to be fuel poor if they are either living in a property with a fuel poverty energy efficiency rating of band D or below or when they spend the required amount to heat their home and they are left with a residual income below the poverty line. Additionally, the three elements that determine whether a household is fuel poor is their household income, household energy requirements and fuel prices.



This graph will give us a clearer understanding of the current energy efficiency of the tenant's home. The higher the rating, the lower their fuel bills are likely to be.

Fuel Poverty Impact On Health

Cold homes can cause or worsen a range of serious health conditions including heart attacks, strokes, bronchitis, and asthma. Fuel poverty is known to have a significant impact on mental health and is a known risk factor for suicide. Each year, around 10,000 people die as a result of living in a cold home. Furthermore, cold homes also prevent children from thriving; without a warm place to do work, it can have a dramatic impact on their progress at school. A lack of hot water means they might avoid personal care which could lead to bullying and isolation. With no warm space to spend time with friends and family, they can spend hours of the day alone in bed separating themselves from the wider world.

Fuel Poverty Statistics

As evidenced in the link below, fuel poverty is constantly rising and so we at Helix 50 made it our priority to bring bills down for good by using renewable energy.

<https://assets.publishing.service.gov.uk/media/63fcdcaa8fa8f527fe30db41/annual-fuel-poverty-statistics-lilee-report-2023-2022-data.pdf>



Assessment:

Research Into The Behaviours And Attitudes Of The Fuel Poor

We were given a list of homes that were suffering from fuel poverty and so we fulfilled assessments to find out whether their home was eligible for funding and if their roof had an appropriate amount of space for PV. When carrying out this assessment, it gave us a much better understanding of who the fuel poor are, how their experiences might differ from those not in fuel poverty, and how this impacts on, or is impacted by, energy and heating use in their homes. The assessment also explores issues such as engagement with energy consumption and bills, relationships with energy providers and landlords, and where the fuel poor seek support and advice. To assess whether a household is in fuel poverty requires detailed information on household income, household composition, building energy efficiency, energy type used and how it is paid for. This was another challenge we had to overcome as such detailed information can be difficult to obtain.

Key Findings:

Heating The Homes:

Those that we determined to have a higher likelihood of being in fuel poverty differed in their heating behaviours in a number of ways, for example, they were less likely to have a comfortably heated home and more likely to still be cold with the heating on. Overall, there was a difference in perception between what householders think uses most home energy and what in reality does so. Higher likelihood households were less likely to think of heating as the main user of energy.

Installing Energy Saving Measures:

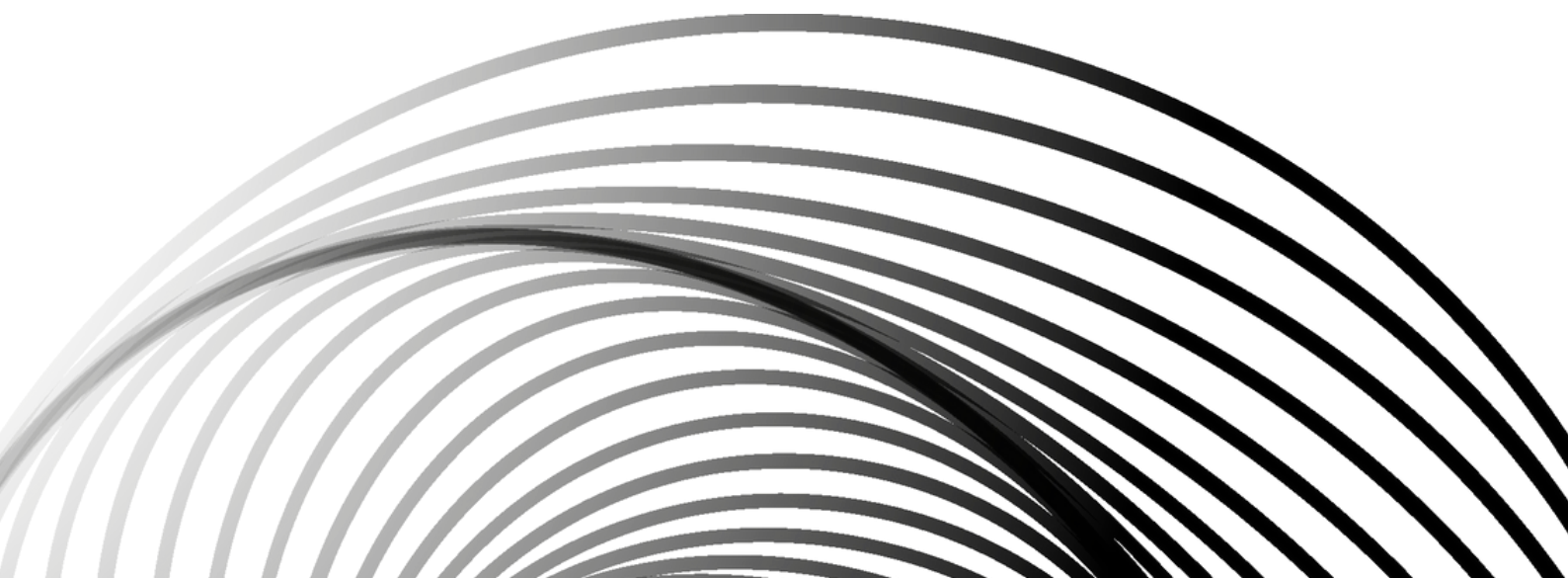
Higher likelihood households were less likely to be aware of what can be done to make their homes more efficient. Furthermore, higher likelihood households were more likely to say they would like to make energy saving improvements but can't afford to do so. Those struggling with bills in general were the least likely to be able to make contribution towards improvements, highlighting the multiple challenges facing fuel poor households in making energy efficiency improvements.

What Are Energy Performance Certificates (EPC)?

Energy Performance Certificates tell you how energy efficient a building is and give it a rating from A (very efficient) to G (inefficient). When social homes have a rating of D and below, they may be entitled to funding from the council for PV energy. Additionally, they tell you how costly it will be to heat and light your property, and what its carbon dioxide emissions are likely to be. An EPC will also include information on what the energy efficiency rating could be if you made the recommended improvements and highlights costs effective ways to achieve a better rating. EPCs are valid for 10 years from the date of issue. The benefits of an EPC are that they understand the energy performance of your home, identify any areas for improvement and make changes to save money and reduce emissions.

Is The House Suitable?

Unfortunately, not every house is suitable for solar panels. Various factors, such as orientation, structure, and material of your roof play a crucial role in determining its compatibility with solar panel installation. For example, a south-facing roof is typically the most optimal choice for solar panel installation due to its prolonged exposure to the sun's rays at their most intense. This orientation ensures that solar panels can absorb the maximum amount of sunlight throughout the day, translating into higher energy generation. However, this doesn't exclude east and west-facing roofs. Another example includes the roof size and layout; for a 4KW solar system, you would approximately need 28 square metres of clear, unobstructed roof space. It's crucial to consider any potential obstructions on your roof, such as skylights, vents, or chimneys. Therefore, we make sure to inspect the property before starting a proposal.



Proposal:

We were fortunate enough to be the first company in the UK to supply specially sourced solar panels (uksol) to contribute towards fuel poverty. In this case we attracted 60% of funding for jigsaw housing, allowing us at Helix to fit more PV on more houses. We made the decision that having PV, a battery and an air source heat pump was the most appropriate option for people who suffer with fuel poverty. This way they will be achieving the maximum amount of energy possible for the cheapest price.

Why Solar Panels?

Energy Independence:

Generating your own solar power contributes to energy independence, reducing reliance on foreign energy sources and the National Grid. This will increase energy security for individuals, reducing vulnerability to price fluctuations, as we have witnessed in 2022 and 2023. By embracing solar energy, individuals will be supporting a more decentralised and democratic energy system, allowing households to take greater control over their energy production and consumption.

Reduced Electricity Bills:

One of the most significant financial benefits of solar power is lower electricity bills. Installing solar panels on a property will allow the tenants to generate their own electricity, reducing their reliance on the grid and lowering monthly utility bills. This would have an immense impact on anyone who is living with fuel poverty as they will be achieving clean energy at a fixed price.

Low Maintenance And Reliability:

Solar power systems have relatively low maintenance requirements, especially when compared to other forms of energy generation. Periodic cleaning and inspection are usually all that's required to keep your solar power system operating at peak efficiency. Moreover, solar power systems are reliable, as the technology has matured over the years, and the risk of downtime is minimal. By choosing solar power, individuals who are suffering with fuel poverty are guaranteed low-maintenance and dependable energy solutions, providing consistent energy generation for decades.

Why A Battery?

Long Life Span:

Solar batteries are designed to last for many years, we intentionally chose to fit a battery in as the tenants suffering with fuel poverty will now be provided with long-term savings on energy costs.

Get More Value From Your Solar Panels:

With battery storage, tenants can power their home from the excess electricity that solar panels produce. This way there is no need to draw on energy supplied from the grid when production falls short from their panels. They can just use the power stored in the solar batteries. The excess power comes from sunny days when the panels meet the base energy needs of their home and direct excess capacity to the batteries.

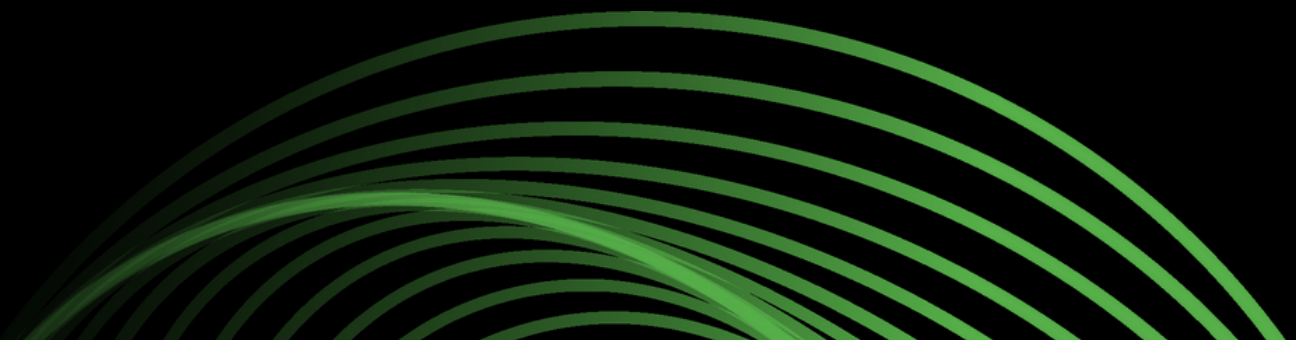
Environmental Benefits:

Solar batteries can also help reduce carbon emissions by storing excess solar energy and reducing the need for fossil fuel-generated electricity. This can help reduce the environmental impact of energy use and contribute to a cleaner, more sustainable future.

Why An Air Source Heat Pump?

Heat Pumps Are Very Efficient

Air source heat pumps typically have an efficiency rating of 300%, meaning that on average they produce three units of energy for every unit of electricity it absorbs. In contrast to other heating systems, electric boilers only have an efficiency rating of 100% while gas boilers can only reach an efficiency of 98%.



Results:

Here are some results from a customer who had a PV and a battery fitted 2 years ago, the total energy they have used is 7050.6kWh and since then have resulted in saving £2820 in just 2 years.

