

APPENDIX C - Annex 1 – Further background information

a. What is fuel poverty?

A household is said to be in fuel poverty when residents cannot afford to heat their home to a reasonable level. This means that they are unable to, or will struggle to, pay their fuel bills. **In 2022, the energy price crisis has exacerbated fuel poverty, with the Joseph Rowntree Foundation reporting that 4.7million people are behind on their bills.**

The government uses a formal definition of fuel poverty in order to aid measurement and to benchmark targets. Prior to 2014, households were considered to be in fuel poverty when more than 10% of their income was spent on fuel (energy) bills, and this is still the case in Scotland, Wales and Northern Ireland. However, following an independent review of fuel poverty commissioned by the then Conservative and Liberal Democrat coalition government and conducted by Professor John Hills at the London School of Economics, the definition was changed to a Low-Income, High Costs (LIHC)¹ indicator. The independent review 'Fuel Poverty: a framework for future action'¹ recommended changing the definition in large part because comparing a household's income to their energy needs against a fixed margin is highly sensitive to fuel prices². For example, higher income households could be spending more than 10% of their income on energy bills if energy prices are high.

In 2021, the Department for Business Energy and Industrial Strategy (BEIS) released an updated fuel poverty strategy 'Sustainable Warmth – Protecting Vulnerable Households in England'. This provided an update to the fuel poverty indicator, replacing the LIHC indicator with the current **Low-Income Low Energy Efficiency (LILEE)** indicator. These changes to definitions mean that historical changes in fuel poverty rates are very hard to map, with the 2014 change causing a reduction in the number of households reported to be in fuel poverty.

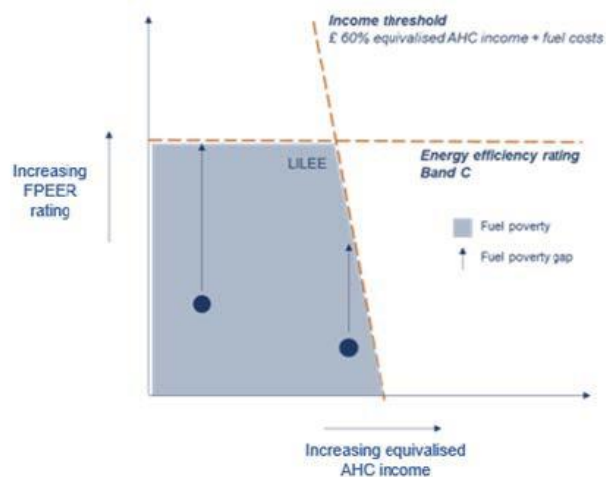


Figure 1 - Graphic demonstrating the criteria for a home to be in fuel poverty (Source: BEIS Fuel Poverty Statistics)

Households are now defined to be in fuel poverty if³:

- They are living in a property with an **Energy Performance Certificate (EPC) rating of band D or below** (low energy efficiency), and
- When they spend the required amount to heat their home, they are left with a **residual income below the official poverty line** (low income)

The latter part of the definition can show the difference between a household's income and the income they need to be no longer considered fuel poor. This is known as the fuel poverty gap. In light of the current energy price crisis, it is worth noting that **the LILEE fuel poverty definition will omit many households living in a property with EPC C or higher nevertheless struggling to pay energy bills.**

¹ Fuel Poverty: a Framework for Future Action (2013). Department of Energy & Climate Change. [Fuel Poverty: a framework for future action - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

² Getting the measure of fuel poverty (2012). Final Report of the Fuel Poverty Review: Summary and Recommendations. Professor John Hills. [4663-fuel-poverty-final-report-summary.pdf \(publishing.service.gov.uk\)](http://publishing.service.gov.uk)

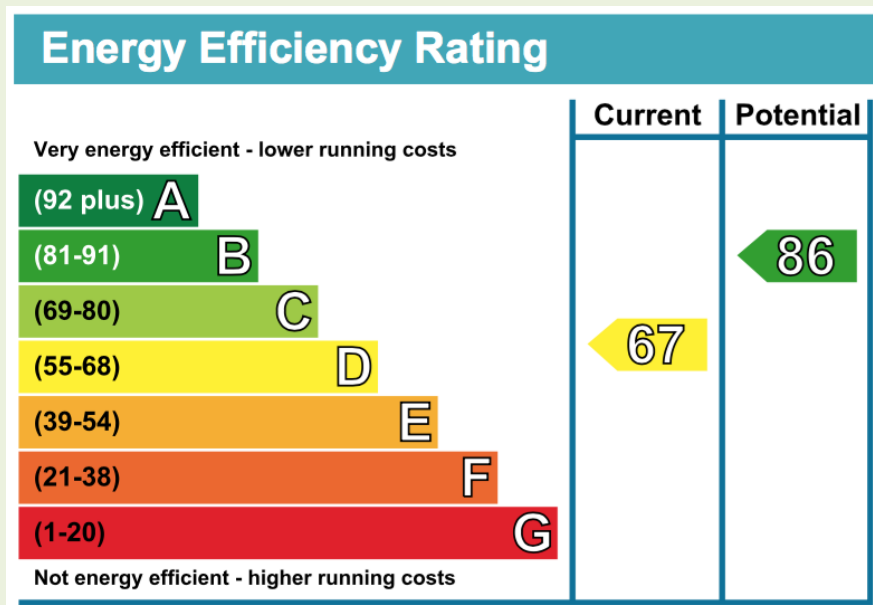
³ Fuel poverty statistics (2022) department for Business, Energy & Industrial Strategy. [Fuel poverty statistics - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

Energy efficiency metrics

Energy Performance Certificates (EPCs) provide a summary of the energy performance and level of energy efficiency of a property and are issued to a property following an assessment by an energy assessor. An EPC rating is the outcome of the assessment, which is a rating between A-G indicating how energy efficient the property is, **with A being the most efficient and G being the least efficient**. The average rating in the UK is band D.

The EPC rating is based on a metric called the **Energy Efficiency Rating (EER)**. The EER metric is based on the cost of heating a home, with an A rated home being the cheapest to run and a G rated home being the most expensive to run. The rating is calculated based on the energy demand of the property using the Standard Assessment Procedure, a government methodology for assessing and comparing the energy performance of properties, which benchmarks energy use compared to floor area and combines this with fuel cost data.

EPCs provide estimates on running costs for a home, as well as recommendations on how to improve energy efficiency and reduce energy bills. EPCs also provide an assessment against the Environment Impact Rating (EIR), which assesses the likely CO2 emissions from a property based on its efficiency.



When fuel poverty escalates to the point of emergency, this is called **fuel crisis**. Generally, fuel crisis is exclusive to those who pre-pay for energy, as if they do not have the funds to top up then they will be left in the cold and dark. Someone is defined as in fuel crisis if they are unable to pay for energy now or will be unable to pay within 48 hours. Fuel poverty and fuel crisis are not mutually exclusive; someone with an EPC C or above could be in fuel crisis, however they would not be defined as in fuel poverty, whilst someone else could be experiencing long term issues with energy bills and be in fuel poverty, but not have reached the point of fuel crisis.

b. What causes fuel poverty?

Fuel poverty can be caused by 3 main factors:

1. Household income - a household with low-income may have serious competing financial pressures. For example, needing to choose between heating and eating. Many opt to forego heating their home.

2. Household energy requirements - if the property is energy inefficient, more energy is required to heat the property. Some households may have illnesses or disabilities that rely on an energy intensive routine.
3. Fuel prices – household energy bills are likely to be nearly double 2020 levels in winter 2023/24⁴ due to the recent spike in gas and electricity prices. Fuel prices can have a significant impact on fuel poverty by increasing the unit cost of the energy required.

The recent spike in energy prices means that it's likely fuel poverty will have increased significantly this year due to factor 3, although statistics reflecting this are yet to be published by Government due to a time lag in the data publication.

c. What is the impact of fuel poverty?

Cold, underheated homes pose many risks to residents, in particular to both physical and mental health, and are associated with excess winter deaths – this is defined as ‘the increase in mortality during winter months (December to March) compared with non-winter months (the preceding August to November and the following April to July)⁵. **There is a strong relationship between cold temperatures and cardio-vascular and respiratory diseases; with each 1C drop in temperature below 5C, GP consultations for respiratory illness in older people increase by 19%, and hospital admissions for Chronic Obstructive Pulmonary Disease (COPD), commonly linked with fuel poverty, are four times more likely to happen over winter.**⁶ Studies have also found that countries with more energy efficient housing have lower excess winter deaths, and that they are almost three times higher in the coldest quarter of housing than in the warmest quarter.⁷

As well as long-term health conditions, cold housing also increases the level of minor illnesses such as colds and flu and exacerbates existing conditions such as arthritis and rheumatism. Additionally, cold homes can have a negative impact on mental health and wellbeing, with a **quarter of adolescents living in cold housing at risk of multiple mental health issues**, compared to 5% of adolescents who have always lived in warm housing. Residents of cold homes also report an impact on social activities, for example they may not want to invite friends over because the house is cold or only a small part is heated, which also has a negative impact on mental health and wellbeing by leading to social isolation.⁸

Fuel poverty could potentially have implications for pre-existing inequalities in the borough, too. Analysis has been carried to assess the prevalence of different protected characteristics, presented in Figures X. This analysis shows that the north of the borough has higher rates of disabled residents, who may be more vulnerable to fuel poverty due to their disability, as well as higher proportions of Black, Asian and other ethnic minority residents, residents whose gender identity is different to that assigned at birth, and residents following a religion.

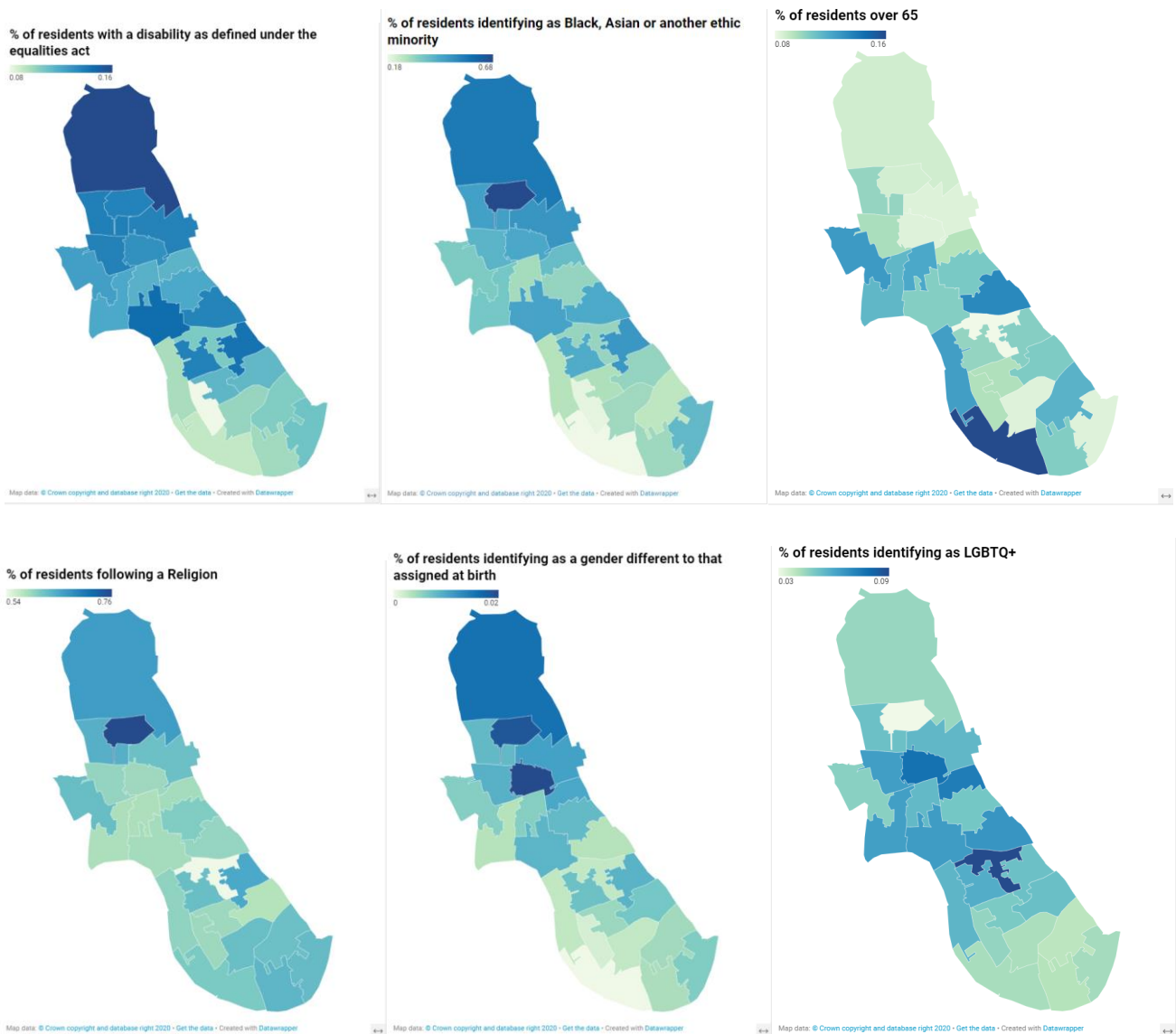
⁴ [Martin Lewis: What the energy price cap change means for you](#)

⁵ Excess winter mortality in England and Wales: 2020 to 2021 (provisional) and 2019 to 2020 (final) [Excess winter mortality in England and Wales - Office for National Statistics \(ons.gov.uk\)](#)

⁶ National Energy Action, Under One Roof: [NEA-Under-One-Roof-FULL-REPORT-FINAL-Feb-19-1.pdf](#)

⁷ The Health Impacts of Cold Homes and Fuel Poverty: [the-health-impacts-of-cold-homes-and-fuel-poverty.pdf \(instituteofhealthequity.org\)](#)

⁸ NICE guidance on cold homes: [Excess winter deaths and illness and the health risks associated with cold homes \(nice.org.uk\)](#)



Fuel poverty is a financial pressure on residents, which can cause issues in other areas of life. Fuel poverty co-exists alongside other financial pressures and could cause issues with accruing debt and sacrificing other bills to pay for energy. Residents in fuel poverty will likely need broader financial support and so reducing bills to reduce the overall burden is a key priority.

Cold homes can also cause issues within the property. Underheating a home can damage the building fabric, for example damp and condensation forming in cold areas of the home. Condensation forms when moist air comes into contact with a cold surface, like a wall or a window. Condensation can lead to mould growth, which can exacerbate pre-existing health conditions such as asthma, as well as damaging the property structure and potentially increasing maintenance costs.

Finally, inefficient homes generally require more energy to heat as a higher proportion of this is lost through poorly insulated walls and windows. This means that energy inefficient homes also lead to large amounts of energy waste, increasing climate warming carbon dioxide emissions and reducing air quality.

d. What is the situation nationally and in London?

In 2021, it was estimated that 13.4% of households in England are fuel poor under the LILEE definition, equating to approximately 3.3 million homes. The average fuel poverty gap

across England was estimated at £338 per household. Over the same period, the average fuel poverty rate in London was 11.9%, with an average fuel poverty gap of £223 per household.⁹ Both in London and nationally, the fuel poverty rate has decreased since 2019, however this could be attributed to the change in survey methods between these years.¹⁰ Additionally, given the current energy price crisis, the rate is likely to have increased markedly since this data release, especially using the old 10% definition.

In terms of progress towards the fuel poverty target and interim targets, the government failed to meet the target for all homes to reach Band E by 2020, however progress has been made towards all targets (as shown in Figure 3).

Fuel poverty target	2010 progress	2019 progress	2020 progress
Band E or above by 2020	91.5	97.4	97.2
Band D or above by 2025	64.6	88.8	90.1
Band C or above by 2030	14.6	47.8	52.1

Figure 2 - National progress towards fuel poverty targets

There is limited data that reflects the impact of the Covid pandemic and the energy price crisis, so it is difficult to get a view of the present situation. **In 2022, the Joseph Rowntree Foundation reported that 4.7million people were behind on their bills.** Experimental data released by the Office for National Statistics uses 2021 Census data to look at the prevalence of poverty and cold-home related illnesses¹¹. This report found that **20.1% of people living in England are experiencing poverty**, and 2.5% of people are both living in poverty and suffering from a cardiovascular or respiratory condition that may make them more vulnerable to the effects of a cold home.

e. What is the situation in H&F and why?

In H&F specifically¹², 11.3% of households were estimated to be fuel poor in 2021 under the LILEE definition, compared to 13.4% nationally and 11.9% in London. The data shows no strong trend over time – note, however, the earlier point about changing definitions of fuel poverty meaning that it is difficult to track fuel poverty over time. This equates to 9,738 households within the

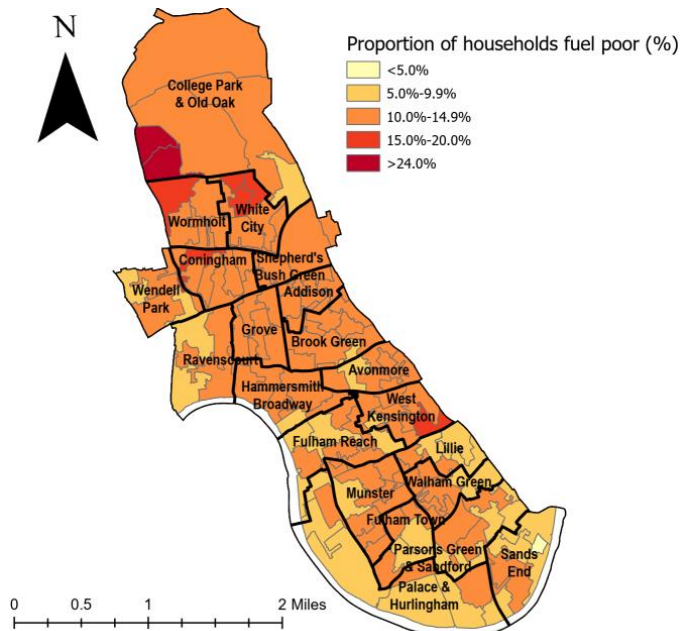


Figure 3 - Fuel poverty rates mapped by LSOA, including ward boundaries

⁹ The latest ONS data on fuel poverty at LA level is for 2021 and does not take into account the increases in energy prices since 2021 (ref: [Annual fuel poverty statistic report: 2023 – GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/annual-fuel-poverty-statistic-report-2023)). Fuel poverty statistics are based on data from the English Housing Survey (EHS) which is modelled with data from other sources. Note in 2020 there were issues due to the pandemic in sample size covering London.

¹⁰ The 2020/21 data was collected during the Covid pandemic which necessitated a change in survey methods. These have affected the sample achieved and data recorded and as such the sharp fall in London may not be a true estimate of the rate of change between these years.

¹¹ Estimating the number of people with cardiovascular or respiratory problems living in poverty, Office for National Statistics (2022): [Estimating the number of people with cardiovascular or respiratory conditions living in poverty, England - Office for National Statistics](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandlife/articles/estimating-the-number-of-people-with-cardiovascular-or-respiratory-conditions-living-in-poverty-england)

¹² The total number of households in H&F used as part of this dataset is 85,897. Where it was possible the new wards boundaries have been used. To carry out some parts of this analysis data has been recalculated to fit the new ward boundaries.

Borough.

The near tripling in energy prices since 2020 will have led to significant increases in fuel poverty rates, even using the LILEE definition that excludes any household living in a property rated EPC C or higher. Higher rates of inflation in London could lead to a disproportionate impact on the capital and thus H&F, with research showing that underlying inflation for local prices in London has consistently been found to track 1.5 percentage points higher than the national figure.¹³ Indeed, **the ONS's data on poverty from 2021 shows that 23.3% of H&F residents are living in poverty, significantly higher than the fuel poverty rate in the borough (9.5%) and higher than the average poverty rate across England (20.1%).**¹⁴

Looking at the geographical distribution of fuel poverty using 2021 data (Figure 4), fuel poverty rates are higher in the more deprived wards in the north of H&F, with College Park and Old Oak having the highest overall fuel poverty rate at 15.6%; notably higher than the average rates both nationally (13.4%) and in London (11.9%).

Why does fuel poverty look like this in H&F?

As previously discussed, fuel poverty is caused by 3 main factors; the energy demand and performance of a property, the income of the householders, and energy prices. The first two of these factors can explain a lot of the pattern of fuel poverty we see in H&F. In terms of energy prices, over 90% of the borough are connected to the gas grid, with the majority of the remaining stock powered solely by electricity. Given that both gas and electricity prices have been affected in the energy price crisis, this is likely to have increased rates of fuel poverty, although data evidencing this is not yet available.

The two wards with the highest rates of fuel poverty are Wormholt and White City and College Park and Old Oak. These two boroughs also have the lowest median household incomes in the borough, as well as the highest rates of housing benefit claimants. This indicates the deprivation seen in the north of the borough and suggests that household income could be a key driver of fuel poverty in these areas. **Additionally, the wards with the highest rates of fuel poverty also reported the highest rates of 'Bad' or 'Very bad' general health in the 2011 census, suggesting correlation between cold homes and poor health.** Census data shows that 68% of those in the borough reporting 'Bad' or 'Very bad' health are living in socially rented housing, demonstrating the need for council intervention in the owned stock.

EPC data provides information on the current energy performance and efficiency of properties, and this data supports the idea that income is the driver of fuel poverty in the north of the borough. Energy performance is inherently linked to various property characteristics, in particular the type of walls, the fuel source, the age of the property and the level of insulation. Whilst Wormholt and White City and College Park and Old Oak have the highest rates of fuel poverty in the borough, the levels of insulation (wall, loft and glazing) are above the borough averages, and the rates of properties with the lowest energy performance (EPC E, F and G) are below the borough average. Additionally, these two wards have the lowest rates of properties built before 1900, with older properties tending to be the hardest to retrofit.

In contrast, Parsons Green and Walham has the highest median income in the borough, but also has the highest rate of homes with the worst energy performance ratings. However, the fuel poverty rate is below the borough average at 7.5%. Additionally, nearly 50% of homes in this ward were built pre-1900, suggesting the issue here is more to do with poor energy performance due to

¹³ Research by City Hall: [Research shows Londoners are worst affected by soaring inflation | London City Hall](#)

¹⁴ ONS data on health conditions and poverty: [Estimating the number of people with cardiovascular or respiratory conditions living in poverty, England - Office for National Statistics](#)

older and naturally less efficient properties, rather than financial pressures. This suggests that different types of support will be more appropriate in different areas of the borough.

How does this affect different protected characteristics?

Fuel poverty is a measure that highlights vulnerability in society. As such, it is inherently linked to other measures of vulnerability in society, and within this, protected characteristics. Census data can allow us to look at the areas of the borough with higher proportions of groups with protected characteristics, which shows a strong correlation with the areas of the borough with higher rates of fuel poverty. Wormholt and White City and College Park and Old Oak have the highest proportion of black, Asian and other ethnic minority residents within the borough, with less than half of the ward populations identifying as White. In terms of disability, boroughs with higher rates of fuel poverty also have higher rates of those living with a long-term health problem or disability; Wormholt and White City, College Park and Old Oak, and Town are the three wards with the highest rates of long-term health problems and disabilities, with more than 15% of residents reporting one of these issues (above the 13% average for H&F).

f. How can this be addressed?

As mentioned earlier, there are three key causes of fuel poverty: household income, the energy demand of the property, and energy prices. Whilst the council does not have control over how energy prices are set, this still means that there are some clear methodologies to reduce fuel poverty, in particular:

- **Maximising household income** – this includes ensuring residents are accessing all benefits and financial support they are eligible for, as well as supporting people into work where this is possible.
- **Improving energy efficiency** – this means retrofitting housing to ensure that residential buildings are efficient, reducing energy demand and thus both reducing bills for residents and reducing energy waste and carbon emissions related to heating and powering a home.

H&F's fuel poverty strategy will seek to use both of these methodologies to ensure a reduction in the rates of fuel poverty across the borough by 2030. The objectives set will reflect the key pathways out of fuel poverty and the action plan will set a clear strategy for achieving these.

g. Fuel poverty and climate change

Fuel poverty contributes to climate change, albeit the interaction is complex. The Fuel Poverty strategy is a supporting strategy to H&F's broader Climate and Ecology strategy, which was published following the announcement of the climate and ecological emergency in 2019. The Fuel Poverty strategy has been published to provide detail of the specific actions that the council will take to address fuel poverty and support groups that are particularly vulnerable to both volatility in energy prices and the negative impacts of a cold home. Some of these actions will have an associated positive impact on emissions.

The government encourages a 'fabric first' approach to decarbonisation of domestic buildings, and this is being applied to H&F's owned stock. In terms of retrofit, this means addressing the building fabric and construction before addressing the heating system and fuel source. Improving the building fabric means energy efficiency measures such as insulation, double glazing and draught proofing. These measures help to reduce the energy demand of a property by reducing the heat wasted through leaky walls and windows, as discussed earlier. This is the focus in terms of fuel poverty, given the need to reduce energy demand in order to reduce bills. This can be seen as the yellow stage in Figure 5.

To fully decarbonise domestic buildings, heating systems need to be moved from fossil fuels to greener sources of energy. This can be seen in the green stage of Figure 5. The primary lever for doing this at the moment is installing heat pumps, which are powered by electricity, thus following an electrification pathway to Net Zero. Heat pumps are around 3 times more efficient than a standard gas boiler, and so can reduce energy demand significantly, as well as providing a green alternative to fossil fuels. However, systems such as heat pumps work best in homes that are appropriately insulated, therefore it is advisable to carry out fabric measures first before addressing the heating system. Installing a heat pump in a home that does not have sufficient insulation will likely mean that the efficiency of the heat pump is not fully realised.

Given the cost of electricity at the moment, a move from a gas boiler to an electric heat pump might lead to an increase in bills for equivalent warmth, despite the efficiency gains of a heat pump. The expectation is that, as the electricity grid becomes greener, the cost of electricity will come down. However, in the absence of a reduction in electricity prices, the focus for fuel poor homes should be on improving building fabric to ensure bill reductions. It is worth noting that in the case of fuel poor homes in particular, improving building fabric might not necessarily lead to long-term carbon savings. Many fuel poor residents underheat their homes due to affordability, and this means that once their home is appropriately insulated, they may choose to heat their home more than they did previously, as it is now more affordable to keep their home warm.

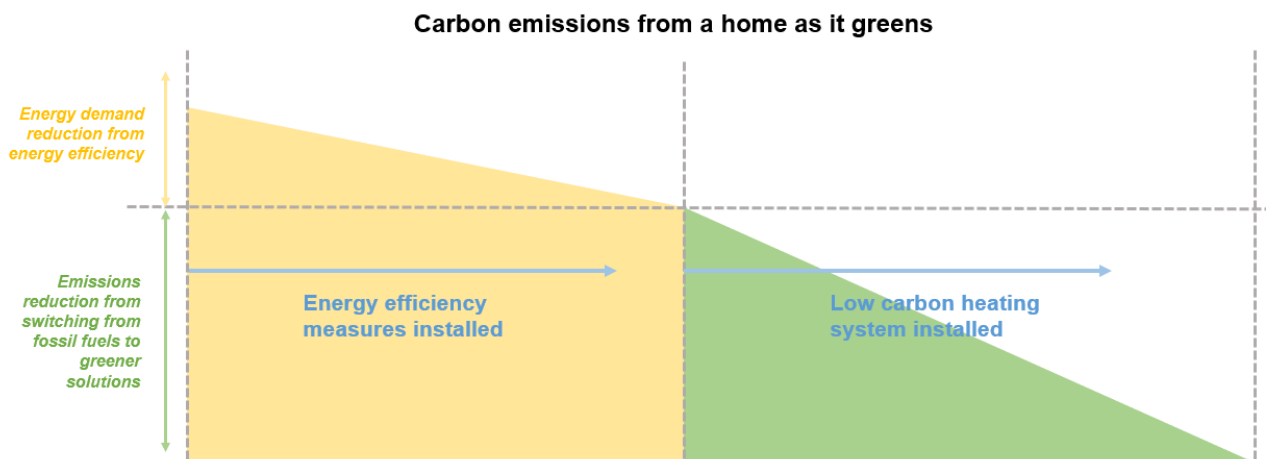


Figure 4 - Diagram showing how carbon emissions reduce with different parts of the home decarbonisation