Beyond the Energy Price Guarantee. With or Without?

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In response to the energy crisis amidst a wider cost of living crisis (see Harari et al, 2022), the UK government put in place the Energy Price Guarantee (EPG) on 8 Sept 2022, which caps the unit price of energy for all consumers. This policy is now, following a statement by the new Chancellor Jeremy Hunt on 17 Oct 2022, due to remain in place until April 2023 after which new longer-term policies for supporting consumers will be considered. In advance of the Medium-Term Fiscal Plan, set for 31 October, this briefing outlines the main shortcomings of the EPG and proposes alternative measures to address these issues.

Key findings

- **The EPG disproportionately benefits well-off households**: The EPG's reduction in the unit rate relative to market prices disproportionately benefits households with higher levels of energy consumption. As energy consumption strongly increases with household income, this disproportionately benefits households on higher incomes.

- **The financial benefit of the EPG is skewed even among high-earners**: Among an estimated 280,000 households with an annual income above £150,000, a small number of around 14,000 households, representing the 95th percentile of energy consumption in this group, consumes more than twice as much energy compared to the nearly 50% of all other households in this high-income group. These super-consumers will benefit most from the EPG.

- **The UK has a large and untapped energy savings potential**: We estimate that England and Wales alone could save up to 29% of primary energy consumption in the residential sector predominantly through reduced electricity and natural gas consumption used for space heating and hot water generation if residential properties were upgraded to their highest energy efficiency standard – primarily through improved insulation measures.

- **The EPG weakens incentives to invest in energy efficiency upgrades by around 30%:** Energy efficiency upgrade investments would save households between £10 to 16 billion per year if they had to pay current market prices for energy. The EPG lowers the prices that consumers face, as a result, energy efficiency upgrade investments under the EPG would only save households between £7 to 11 billion rendering them less economical.

- **Energy efficiency upgrades would provide permanent financial relief to households and offer large environmental benefits.** Energy efficiency investments could permanently lower CO2 emissions which itself has a large present and future monetary value as carbon taxes are set to increase energy prices going forward. We estimate that the energy efficiency upgrades may save between 25 to 40 million tons of CO2 per year which, with a carbon price of £75 per ton would provide further savings between £1.5 to £3 billion per year.

- **Households with the highest energy consumption levels are least encouraged to make energy saving measures:** A household in the top 5%

of the energy consumption distribution is estimated to save more than 7,500 kWh per year if the property is upgraded to its highest energy performance standards. But the savings these consumers stand to make through the EPG significantly weakens their financial incentive to make such investments in boosting the energy efficiency.

- **Energy savings investments could pay for themselves within a relatively short period of time:** With an interest rate of 3% and projected savings of £10 billion and an investment volume of £60 billion for the properties for which we have EPC-based recommendations (around 50% of the building stock), we estimate that energy efficiency upgrades, in particular insulation and boiler replacement, would pay for themselves **within six to seven years**.

- The UK government has much of the data needed to ensure timely, targeted, and cost-effective interventions.

Recommendations

We propose several policy alternatives which are targeted and incentivise energy efficiency.

- A two-tier tariff providing more generous targeted support without eroding energy savings incentives. Alternatives that provide even more targeted support with better incentive preservation do also exist and may be implementable (see Bachman et al, 2022; Bhattacharjee et al, 2022). The two tier-tariff presented here would have a similar costing as the governments EPG but could be even more targeted.

- We estimate that boiler replacements for the properties we have EPC data for would cost around £10 billion. The insulation program would cost around £50billion.

- A targeted means-tested insulation and boiler replacement grants program could be devised to help low-income households that do not have the means to afford the upgrades.

- A homeowner energy savings upgrade incentive program operating via tax-credits could be devised to encourage homeowners to take up energy efficiency measures.

- A national energy savings lottery may encourage behavioral changes around energy use.

- A reform to planning laws to end prohibitions on building measures that yield relative and absolute energy savings.

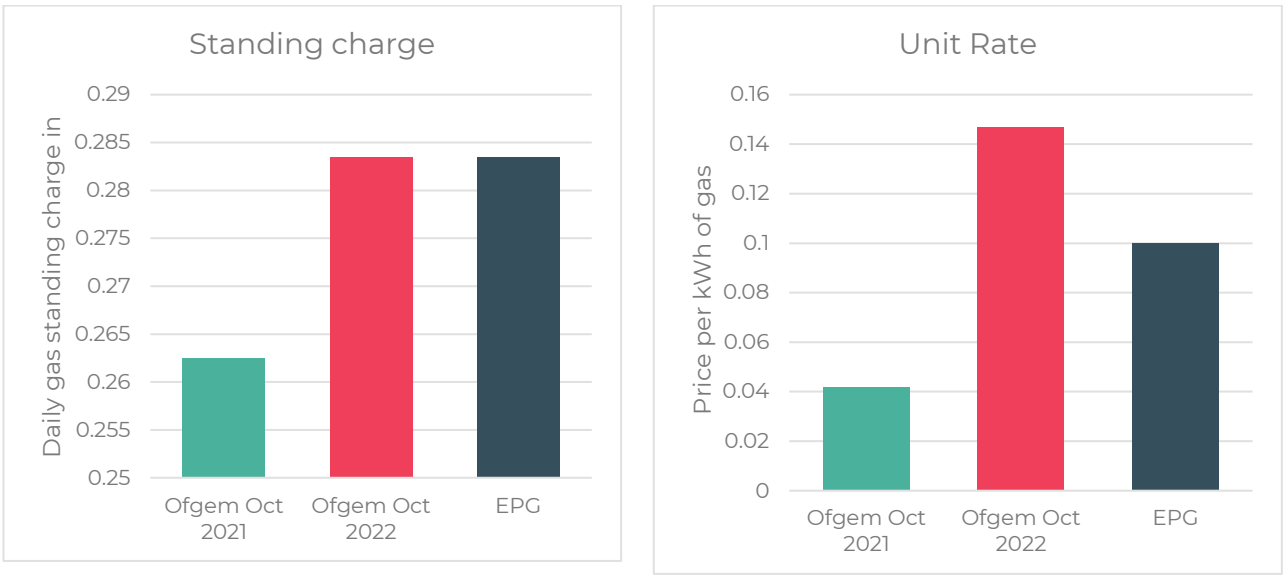
- A national energy savings champions program to overcome local collective action problems.

These measures should all be supported by policies to tackle supply constraints by facilitating migration and boosting incentives for skill transfers.

Background on the Energy Price Guarantee (EPG)

The EPG is a major intervention in energy markets, capping the price that households pay for both electricity and natural gas for domestic use. The EPG consists of two components: a **standing charge** that all households connected to the natural gas or electricity grid need to pay, irrespective of their level of consumption, and a **unit rate** that caps the price of energy for electricity and gas at a level that has been chosen such that the **average household** that is not expected to pay more than £2,500 per year in bills for electricity and gas.

Figure 1: Standing charge and unit rates as per Ofgem's recommendation in October 2021, October 2022 and as implemented under the energy price guarantee (EPG)



As illustrated in Figure 1, the EPG **increases the standing charge** in line with Ofgem's recommendations for October 2022 (which are based on wholesale natural gas and electricity market prices). This has the direct impact of increasing the financial burden of the standing charge for all consumers, irrespective of the level of their energy consumption.

However, the EPG caps the unit rate at a level that is notably lower than Ofgem's recommendation. The difference in energy cost between the maximum unit rate and the market price is covered by the Treasury. The EPG is thus a **subsidy** as it reduces the costs that consumers face relative to market prices.

Background on Energy Performance Certificates (EPCs)

The underlying data that is used in this report to model energy demand and energy savings takes advantage of the population of EPC data that is available for the UK. An estimated 50% of the UK's building stock has an EPC that is publicly available.

EPCs capture data pertaining to 13.5 million UK residential properties. They provide the technically required energy consumption for a specific property based on the property's physical characteristics such as its built-form and building material characteristics along with a broad range of other technical parameters. In addition to the theoretical energy consumption, each property also includes a theoretically possible lower potential energy consumption that could be achieved if energy efficiency building upgrades are implemented.

We refine and calibrate this date with actual energy consumption data drawing on a multitude of data sources and statistical processes. The resulting data matches well the empirical distribution of actual energy consumption while preserving our ability to study the energy savings potential that is feasible.

The underlying micro data we use is available through the UK's National Energy Efficiency Data Framework (NEED). This makes available anonymized micro data on energy consumption along with very spatially granular (to the postcode level) actual property-level energy consumption data.

Our use of the data is further described in Fetzer, Bishop and Gazze (2022). The data used in this report and our underlying research paper will be made available as part of an interactive exclusive with a national media outlet in the coming days.

The short-comings of the EPG

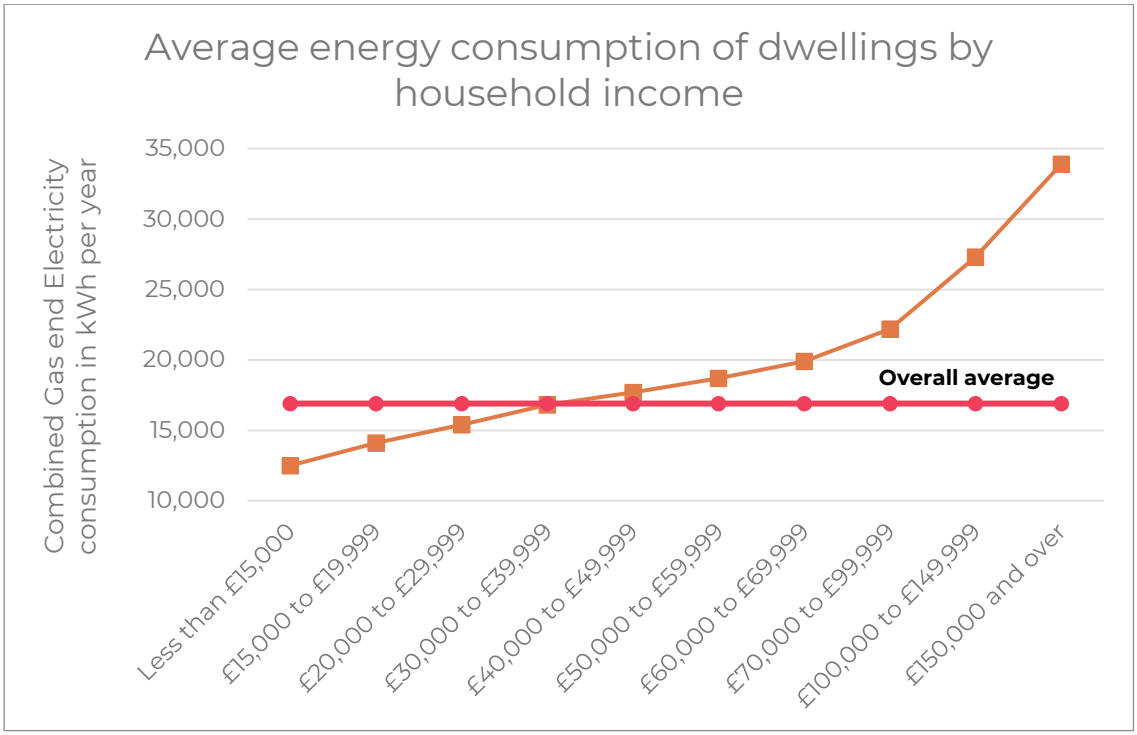
The EPG is a major intervention in price-setting mechanisms in energy markets that is fiscally costly, disproportionately benefits the (very) well off, and at the same time **erodes incentives to save energy both in the short and longer term**.

Fact 1: The EPG disproportionately benefits well-off households

The uniform rise in the standing charge increases the financial burden of energy costs for households, irrespective of their level of consumption. As a result, the **financial burden of the standing charge** is disproportionately borne by households with lower levels of energy consumption, which, on average, tend to be households on lower incomes.

Meanwhile, the reduction in the unit rate relative to market prices disproportionately benefits households with higher levels of energy consumption. As energy consumption **strongly increases with household income**, this disproportionately benefits households on higher incomes. The average energy consumption of households with an income of more than £150,000 per year is nearly twice as high as the national average, indicating that these households, on average, benefit twice as much compared to lower income households.

Figure 2 - Average energy consumption of dwellings by household income

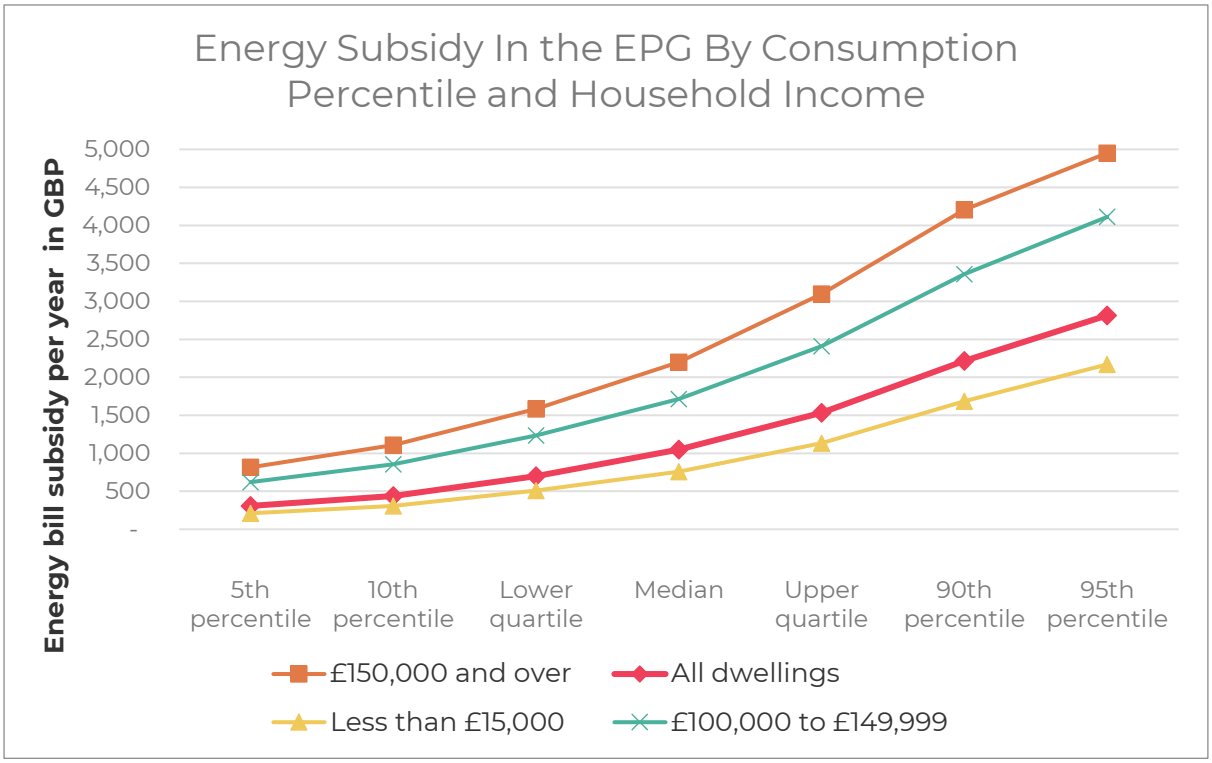


Fact 2: The financial benefit of the EPG is skewed even among high-earners

Energy consumption is unevenly distributed not just **between income strata** but also **within income strata**. That is why the financial benefit to households, and therefore, the indirect financial burden to the public, is also unevenly distributed. For example, among households with the highest income that are in the highest energy consumption percentile, the benefit they receive from the EPG's subsidy stands at least at £5,000 per year. This is nearly five times as much as the financial benefit that may arise out of the subsidy for more than 50% of the households in the UK.

But **even among the highest income strata, the subsidy amount from the EPG is unevenly distributed**. Among an estimated 280,000 households with an annual income above £150,000, a small number of around 14,000 households representing the 95th percentile of energy consumption in this group consumes more than twice as much energy compared to the nearly 50% of all other households in this high-income group. A property with such an energy consumption profile, based on data from EPCs, is estimated to have at least 8 rooms and is at least 250 sqm large. Hence, even among the high earners, a small group stands to disproportionately benefit from the EPG.

Figure 3 - Energy subsidy implemented through the EPG relative to October 2022 Ofgem Market prices by energy consumption and household income



Fact 3: The UK has a large and untapped energy savings potential

The UK has **large and untapped energy savings potential** due to the **poor energy efficiency standards** of its building stock. Using data on over 13.4 million properties representing 50% of the English and Welsh building stock, we estimate that England and Wales alone could save at least 30% in energy, predominantly through reduced electricity and natural gas consumption used for space heating and hot water generation.

Financially, using Ofgem October 2022 estimates of **market prices**, this energy savings potential amounts to a financial saving of between **£10 billion** for the 13.4 million properties and could easily be closer to **£20 billion** in the whole residential housing stock. This benefit would be realized every year if prices remain elevated.

The financial relief that arises from reductions in energy demand would be **permanent and structural** and thus is providing a **net positive contribution to their financing**. Further, in addition to providing large financial benefits, it would also offer **significant environmental benefits**: we estimate that reduced energy consumption can lead to **permanently lower CO2 emissions between 25 to 40 million tons** or at least 5% of the UK's CO2 emissions. These CO2 emissions savings, if valued at a present CO2 ETS price of around £ 75 per ton, would be worth between £1.5 to £3 billion per annum implying a further net positive benefit to society.

Figure 4 – Energy, Costs and CO2 savings potential hidden in the UK building stock with EPC records

This reduction in energy savings is primarily driven by three primary interventions: **cavity wall or solid wall insulation**, **floor- and roof/loft insulation** measures, and **boiler replacements**.

Evidence suggests that measures to **improve insulation should be targeted at properties with the lowest energy efficiency rating**, while boiler replacement programs should be targeted at households with higher energy efficiency ratings.[1] Joint interventions, such as insulation coupled with boiler replacements offer the largest direct benefit.

Solar panel and solar heating installation should be prioritized when scalable technologies exist, which should be boosted through local community interventions outlined below. These need to be appropriately incentivized but could, in addition to offering large financial- and environmental benefits, also offer contribute to improving community cohesion.

Fact 4: The EPG weakens incentives to invest in energy saving measures

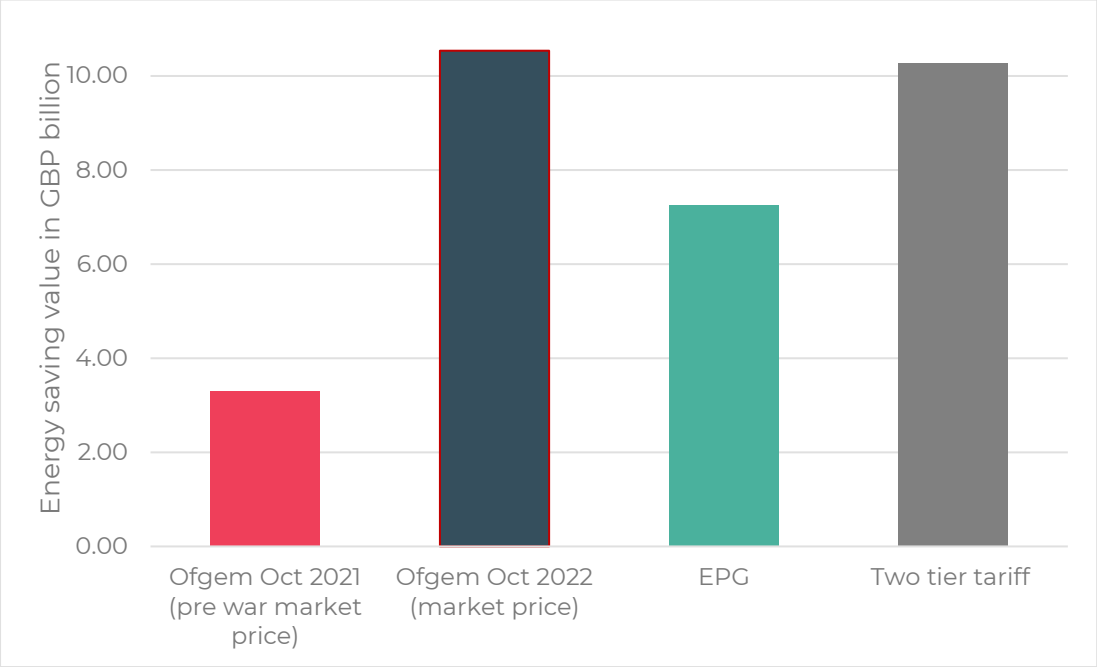
The EPG, by lowering consumer prices relative to market prices is weakening the incentives both **to temporarily save energy** as well as to **permanently lower energy consumption** through energy efficiency upgrades.

The **weakening of the energy savings incentives is material**. Using data for 50% of the UK building stock, we estimate that before the Russian war against Ukraine, the energy savings potential in the UK's building stock was valued at a mere £3.3 billion per year when using Ofgem October 2021 price cap as guidance. This implies that many energy savings investments were hardly cost effective. This is because energy from hydrocarbon sources was artificially too low. It did not account for the negative externalities and indirect costs such as the environmental, health and

[1] See National Energy Efficiency Data-Framework (NEED): impact of measures data tables 2021, Impact of measures by attribute data.

national security costs. The war in Ukraine, by drastically increasing energy costs, has changed the economics of energy efficiency investments. Using the Ofgem October 2022 price cap as a guide, we estimate that the economic value of the energy savings characterised under Fact 3 has increased to around **£10 billion** embedded in 50% of the UK's building stock. The true potential could be as high as £16 billion if the remaining properties are included.

Figure 5 – Valuation of energy savings in £ billion under different energy prices and policies



The **EPG is weakening the incentives for households to invest in energy savings measures** by around 30%. Energy savings investments under market prices would save at least £10 to 16 billion per year, relative to savings of just £7 to 11 billion under the EPG.

While the EPG provides **financial relief** to households, it does so in an untargeted way. An alternative policy proposal consisting of a **two-tier tariff** that is estimated to fiscally cost the same amount as the EPG would keep energy savings incentives intact.

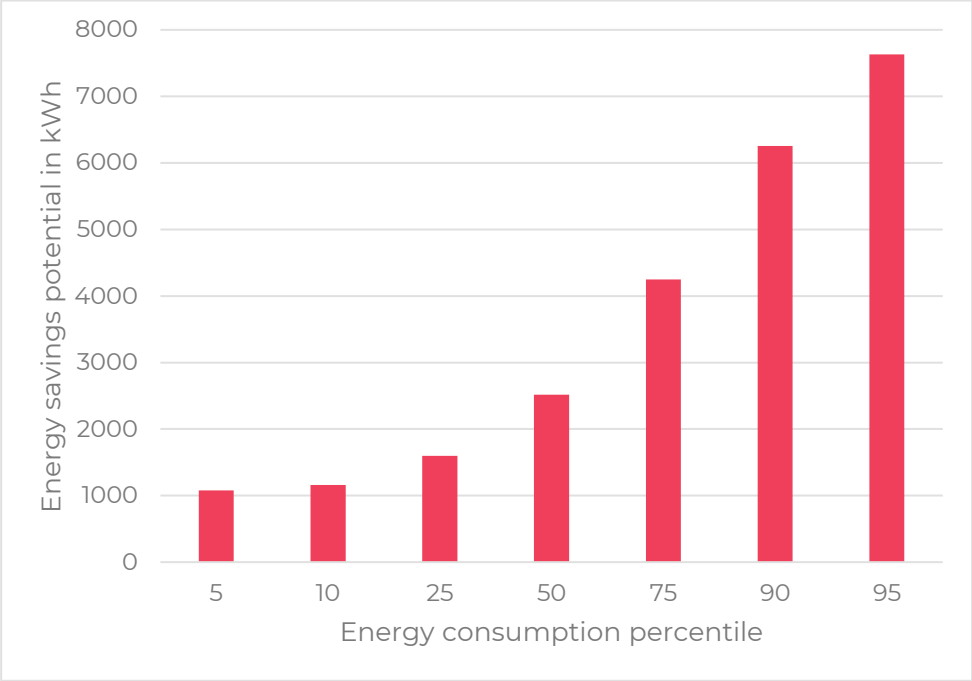
Fact 5: Households with the highest energy consumption levels are least encouraged to make energy saving measures

The energy savings potential, like energy consumption, is **unevenly distributed in society**. The energy savings potential is highest, in relative terms, among households and in regions that are **financially well off and that consume a lot of energy** by virtue of the building stock in these areas.

Among households in the top decile of energy consumption, the energy savings potential that could be realized due to energy efficiency upgrades is around 1/3 of their overall energy consumption. A household in the top 5% of the energy consumption distribution is estimated to save more than of 7,500 kWh per year if their property were upgraded to its highest energy performance standards. This

energy saving is three times higher compared to the energy savings that can be realized across 50% of households in England and Wales.

Figure 6 – Energy savings potential due to energy efficiency investments by energy consumption percentile



Since **energy consumption and income are highly correlated**, this implies that the energy savings potential that can be realized is highest in a demographic group that should be most able to financially stem the cost of such investments. A targeted **energy savings investment incentive scheme** could be put in place that makes EPC-verified improvement **investments income-tax-deductible.** This could be particularly effective in mobilizing energy efficiency savings investments among this demographic.

For lower income households, **government grants** or equity release financing options are viable alternatives. Since energy savings potential among lower income households is limited and since this group stands to benefit the least from the EPG, it is imperative to consider alternatives to providing financial relief to those households as the possibility for them to cut energy use are extremely limited without notably reducing their standard of living.

The combination of a **two-tier energy tariff,** alongside **an energy efficiency investment tax incentive scheme** and **government grants** would offer the best of both worlds: it would increase incentives to invest in energy savings measures while providing maximum relief in a targeted fashion to households who either cannot adjust energy use (non-owner occupiers) or who don't have the financial means to do so.

Fact 6: Energy savings investments could pay for themselves within a relatively short period of time

Higher energy prices naturally change the cost and benefit calculation for energy savings measures. Using EPC data on the cost of energy savings measures, that we have uprated to account for inflation, we estimate that the combined cost of energy saving measures to bring buildings up to their potential ranges from £60 billion to £120 billion (this would produce energy cost savings, valued at the Ofgem October 2022 prices, of between £10 billion and £16 billion).

Holding energy prices constant at the level that is consistent with the October 2022 Ofgem energy prices we can carry out some simple simulations of **the amortisation of such investments**.

With an interest rate of 3% and projected savings of £10 billion and an investment volume of £60 billion, we estimate that the **energy efficiency upgrades would pay for themselves within six to seven years**. This is well above the average tenure of homeowners in the UK, suggesting that current owners would reap the full reward of their energy savings investments.

Taking into account the "mini budget", which caused a sharp increase in UK debt yields to 4%, along with the EPG undermining the energy savings investment incentives, the amortisation period has increased to eleven years highlighting the potential adverse consequences of recent economic policy uncertainty in the UK.

Naturally, energy prices could drop again. This in turn, would change the economics of energy savings investment. Yet, the primary question is how far energy prices could drop. If natural gas continues to be **primarily imported via LNG**, energy prices will remain structurally higher due to the **physical cost and the conversion losses** that arise from the transportation vis-à-vis pipeline imports. This, together with higher carbon taxation will likely support structurally elevated energy prices in the future. As a result, there should be no further delays in ensuring that households and consumers have the right incentives to reduce energy consumption temporarily and permanently.

Fact 7: The UK government has much of the data needed to ensure timely, targeted, and cost-effective interventions

The UK has been developing a **comprehensive data infrastructure** to measure, as well as track, energy use in the residential sector. The National Energy Efficiency Data-Framework (NEED) provides the UK government with data on residential energy use at the individual meter level.

This data can be linked with socio-economic survey data through address-based matching along with administrative data on EPCs which capture the technical energy consumption. All this can be done while protecting the anonymity of the individuals involved. It is in the public interest to leverage this data to provide targeted interventions.

Historic microdata data from recent years, much of which is published in aggregate statistics, is well sufficient to produce such measures and targeted interventions.

This data, much of which is in some form in the public domain, can, and should, be leveraged to develop more targeted, more effective and cheaper interventions that adhere to the best practices of evidence-based policy making without distorting **market-determined energy prices**.

Where next after the EPG? Alternative policy proposals

In April 2023 the EPG will come to an end. The government will look to put in place a longer-term plan to support consumers with rising energy costs. Any new policy should follow four tenets:

- Aim to preserve price-signals to encourage energy savings and investments in energy savings.
- Provide targeted financial relief for households without the financial means to cover increased energy bills.
- Provide targeted incentives to homeowners, housing associations and local councils to make building upgrades.
- Tackle supply-side constraints that undermine such investments to take place.

Below we offer a range of policy proposals which work to these tenets.

A two-tier tariff could provide more generous targeted support without weakening energy savings incentives to same extent

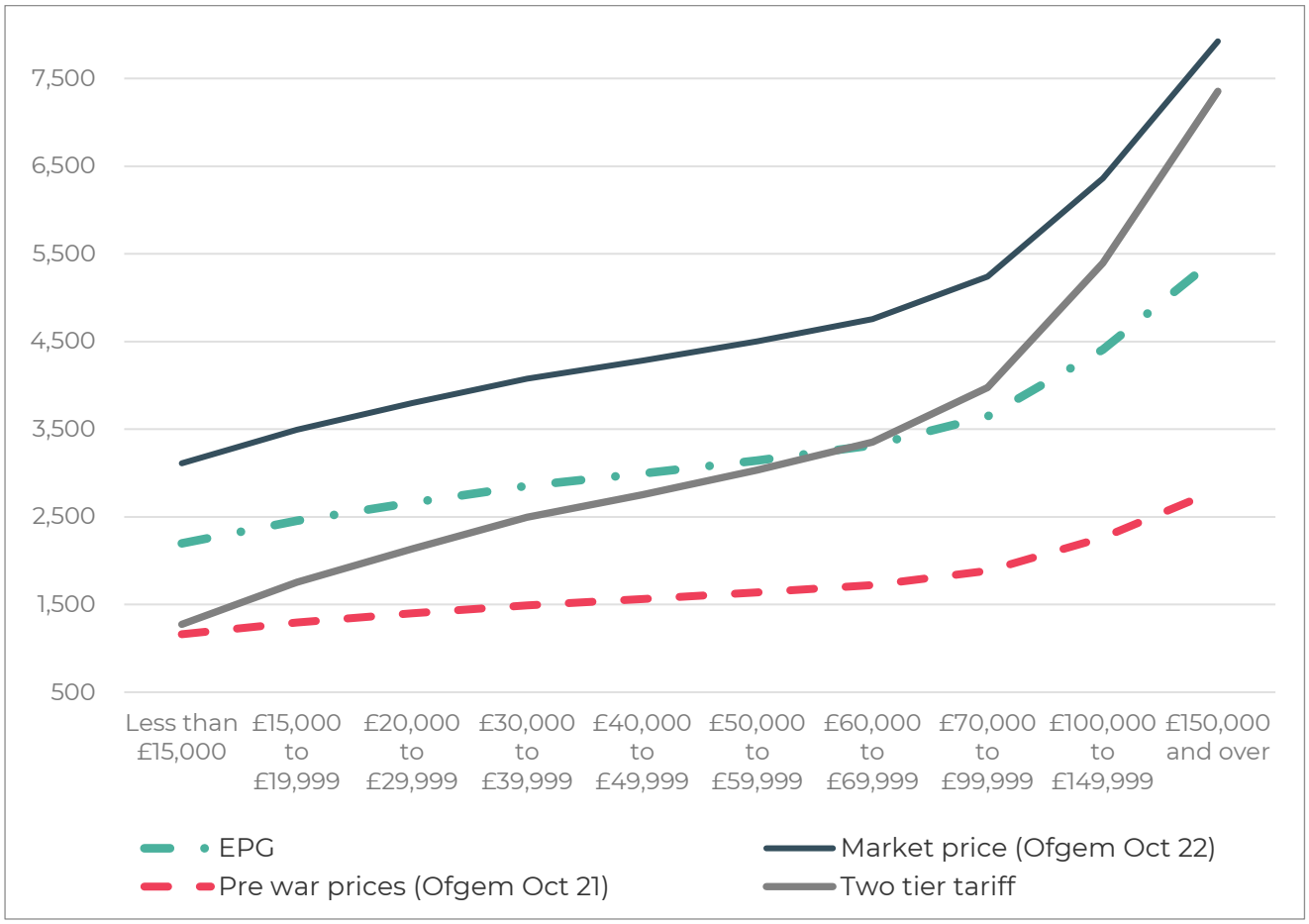
The present EPG sees energy bills increasing for all consumers relative to market prices, while providing the largest financial benefit to households with very high energy use. Due to its untargeted nature, the EPG is unnecessarily fiscally expensive, which is contributing to market dislocations.

An alternative policy proposal would provide for a two-tier tariff whereby the **standing charge would be fixed at the October 2021 levels as would energy prices for electricity and gas** for the first 9,500 kWh of natural gas and the first 2,500 kWh of electricity. As 50% of UK households consume less than 12,100 kWh of natural gas and 2,900 kWh of electricity this would drastically limit the energy price increase for the bulk of households.

The **second tier of the energy tariff** could be set at steeper levels or at levels consistent with the Ofgem price cap projects. For example, a tariff with a unit price of 20 pence per kWh for natural gas and 60 pence per kWh for electricity, together with the first tier as described would financially come in at a similar fiscal cost to the government as the EPG.

This two-tier tariff has been designed to be fiscally similarly expensive as the present EPG, but it offers much more targeted support without undermining incentives to save energy.

Figure 8 – Average energy bills per year under different policy proposals and different energy prices



The above figure plots the impact of the EPG versus the two-tier tariff policy proposal. As is visible, the **EPG sees a notable increase in energy bills, on average, for all income groups** based on their energy consumption. The two tier-tariff would equally see an increase, yet, rather than this increase occurring as a jump, the burden is smoothly increasing, ultimately, driven by the underlying energy consumption levels.

The two-tier tariff sees, on average, **all households better off relative to the EPG up to a household income of £70,000**. A two-tier tariff would thus benefit many more people more generously while preserving the signal function of energy prices to encourage savings in the demographic and income group with highest energy savings potential.

Table 4 and Table 6 provide a contrast and view into the distributional side of the two-tier tariff proposal. Table 4 showcases what would happen to energy bills under such a two-tier proposal, while Table 6 compares the cost increase relative to the October 2021 Ofgem price cap. **An estimated 12.7 million households**

would be financially better off under such a Two-Tier Tariff relative to the EPG. An estimated 17.2 million households would be either better off or, at most, £1,000 worse off compared to the EPG.

A two-tier tariff or variations thereof could thus represent a drastic relief in energy bills that is much more targeted for lower income households without eroding the energy savings investments in the demographic group that has most energy savings potential.

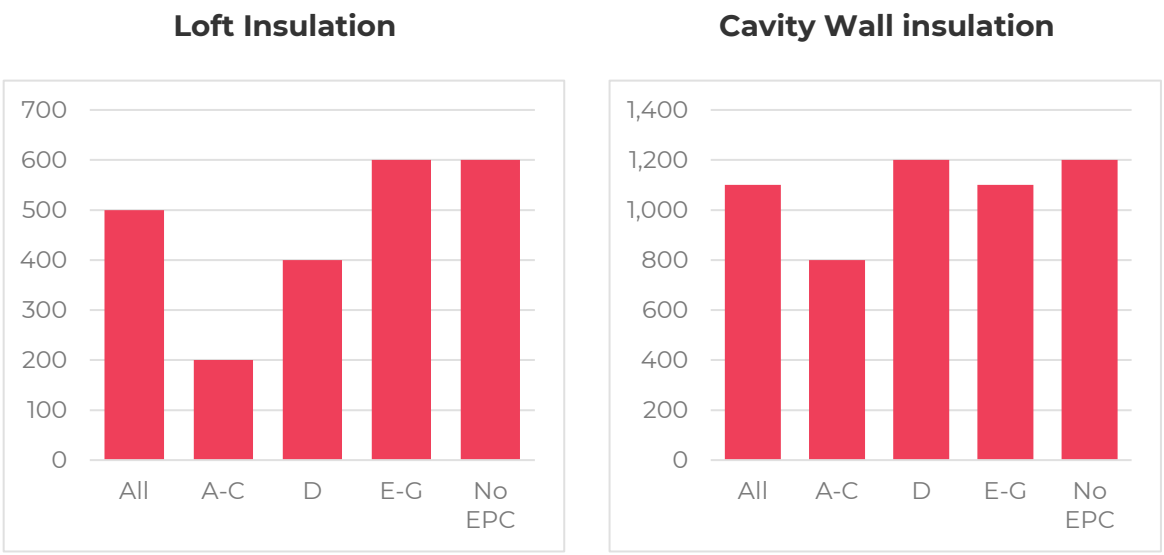
A targeted means-tested insulation and boiler replacement grants program

The most effective measures to reduce energy consumptions are also relatively cheap. Loft, cavity-wall and solid-wall insulation and boiler replacements each deliver notable energy savings reducing gas demand, which is particularly relevant this winter. The system of grants for insulation measures needs to be expanded and scaled up. These costs could be clawed back through a **new duty payable by sellers of properties** that benefited from such a grant, making the measure dynamically much less costly.

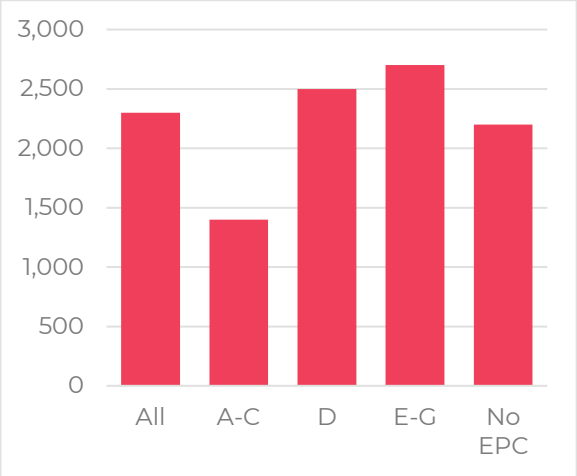
Insulation measures and boiler upgrades are the two most immediate energy savings investment that the UK government should boost. Evidence from the UK NEEDs Impact of Measures data suggests that the energy savings that arise from insulation measures are higher the lower the EPC of a property. This pattern suggests that an intervention that is means tested and targeted towards properties with **a low EPC rating or no EPC rating** should be preferred.

The most effective measures combine boiler-replacement with insulation measures. Any grants program should be time-limited with declining generosity of grants to take advantage of the likely significant economies of scale that may arise once the supply-side adjusts to increased levels of demand.

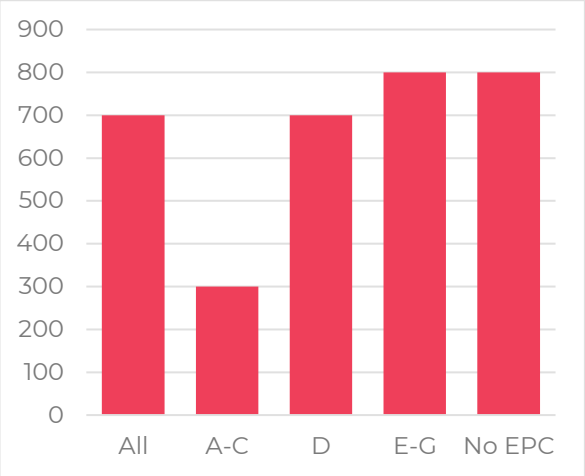
Figure 9 – Gas Energy Savings in kWh for different measures from NEED data



Solid Wall Insulation



Condensing Boiler Replacement

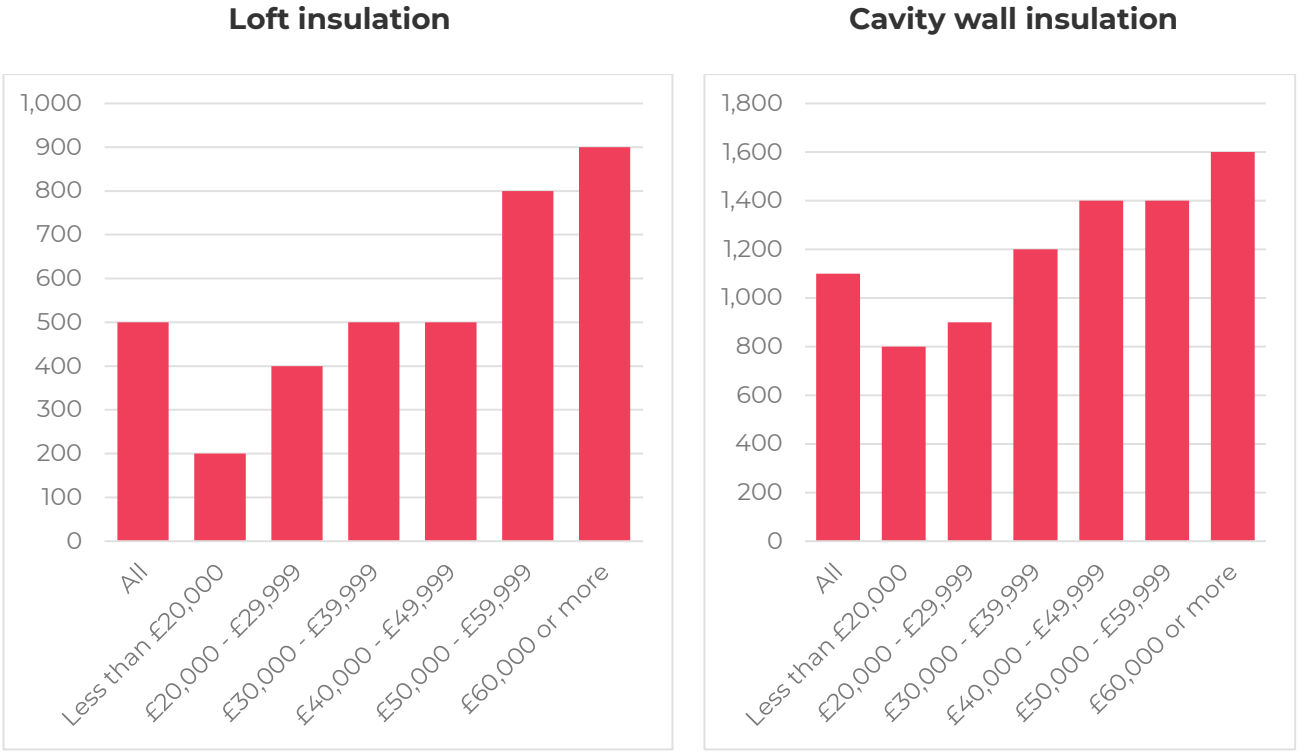


A homeowner energy savings upgrade incentive program

The energy savings potential is highest in **properties inhabited by residents with relatively high income,** as established earlier. Figure 10 illustrates this using NEED Effect of Measures data. This suggests that the effect of loft-insulation measures in reducing gas consumption among the highest income bracket is more than four times as high among households with an income of £60,000 or more. The reason this pattern emerges is that households in this bracket are more likely to inhabit larger detached homes with higher structural energy consumption.

As higher income households may not benefit from a system of means-tested grants and may be hurt more, on average, by a two-tier tariff should their energy consumption be above the allowance, said households should be given **energy savings incentives** through the tax system. HMRC could make energy efficiency upgrade investments tax incentives similar to the **super deduction of capital investments for firms** benefiting owner occupiers making this (income tax) tax deductible and thereby offer a large financial incentive to carry out such investments. As with the system of grants, homeowners in properties that benefited from such a supercharged tax deduction should be asked to pay an extra duty to HMRC when a property is sold in the future. Any tax deduction should come with a sunset clause and ideally be designed dynamically with the tax deductions declining over time as the retrofitting industry matures and is able to offer lower costs of insulation measures. The front loading will create strong incentives to expand supply capacities in this sector.

Figure 10 – Estimated median gas savings of loft- and cavity wall insulation by household income



National energy savings lottery

To encourage broad participation in an energy savings program, the UK government could set up an **energy savings lottery** in which households that achieve energy demand reductions of a certain threshold relative to their previous year's energy consumption (verified through meter readings), get to participate in a lottery that is offering cash prizes.

The lottery should be designed to have a high winning probability and could be tied to households installing smart energy meters, submitting regular meter readings to their energy suppliers etc.

Incentives could be set very steep. Lotteries have been shown to create compliance with tax code and in particular value added tax systems in other countries.

Reform planning laws to end prohibitions on building measures that yield relative and absolute energy savings

A reform to planning laws has been mooted for several years to tackle the UK's chronic housing shortage. Planning laws may be a barrier to energy efficiency upgrades that are unlikely to reflect a national consensus. Installation of energy efficient windows, solar panels or heating modules should be encouraged, not prohibited by restrictive planning laws.

National energy savings champions program to overcome local collective action challenges

Some energy efficiency measures, or energy savings measures are more scalable than others. In rows of terraced houses, for example, it is more cost effective to install photovoltaic (PV) panels not just on a single roof but on whole rows of houses sequentially in one go. As the primary cost of PV installation lies in the planning process along with the cost of labour to install panels, improving the efficiency of this process would be beneficial.

The main obstacle for scalable PV installation on British rooftops is likely to be collective action problems. The UK could champion a **Sustainability Champions program** whereby individual firms, self-employed or other program participants bring together small communities to overcome collective action challenges and the fixed cost of investing in planning more scalable energy savings or sustainability investment programs.

The Sustainability Champion would receive a financial reward funded by the UK government that is at least a minimum lump sum with an incentive payment that is proportional to the energy savings or the energy replacement (e.g., in case of renewable energy installations) that is achieved via such a program. This reward compensates the champion from helping communities overcome **collective action problems** and to encourage individuals to incur investments to work within their community.

Such a program should be open to both individual and institutional community members. Joint owned and operated energy supply initiatives that may arise from the joint operation of a solar farm on rooftops across a row of terraced houses should be exempted from much of the compliance and red tape associated with forming limited liability companies and any gains should be treated in a tax favourable way.

Tackle supply constraints by facilitating migration and boosting incentives for skill transfers

The prime challenge for immediate action is the UK's lack of a skilled workforce that could carry out much of the energy savings measures. To overcome these challenges, the UK should consider reopening Freedom of Movement from the EU.

The migration system in place is unlikely to mobilize the right number of people with the right skillset and language skills necessary to allow for rapid expansion of supply capacities among retrofitters, electricians, and other skilled trades.

Table 1 – Energy Bills in in £ per year under Ofgem October 2021 pre-war gas and electricity prices by household income

		Energy Consumption Percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	1,496	513	651	927	1,300	1,818	2,566	3,222
Less than £15,000	1,161	412	513	726	986	1,391	2,002	2,540
£15,000 to £19,999	1,295	454	584	806	1,115	1,555	2,156	2,729
£20,000 to £29,999	1,400	500	634	885	1,224	1,667	2,303	2,863
£30,000 to £39,999	1,492	526	685	961	1,325	1,789	2,462	3,043
£40,000 to £49,999	1,563	597	731	1,023	1,396	1,881	2,570	3,160
£50,000 to £59,999	1,638	618	772	1,069	1,446	1,964	2,683	3,302
£60,000 to £69,999	1,722	655	814	1,124	1,525	2,073	2,809	3,486
£70,000 to £99,999	1,885	710	906	1,249	1,689	2,278	3,106	3,841
£100,000 to £149,999	2,266	839	1,086	1,488	2,003	2,751	3,788	4,623
£150,000 and over	2,809	1,045	1,350	1,856	2,513	3,491	4,719	5,563

Notes: This table presents energy bills by household income and energy consumption percentiles using the pre-war Ofgem October 2021 energy price cap as input to measure prices.

Table 2 – Counterfactual Energy Bills in in £ per year if Ofgem October 2022 prices had been implemented by household income

		Energy consumption percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	4,091	1,224	1,644	2,462	3,552	5,049	7,158	8,988
Less than £15,000	3,111	914	1,224	1,865	2,646	3,811	5,500	6,961
£15,000 to £19,999	3,494	1,040	1,430	2,101	3,014	4,275	5,957	7,514
£20,000 to £29,999	3,796	1,180	1,585	2,336	3,331	4,607	6,384	7,919
£30,000 to £39,999	4,076	1,268	1,739	2,557	3,619	4,968	6,856	8,464
£40,000 to £49,999	4,283	1,474	1,879	2,734	3,825	5,226	7,173	8,811
£50,000 to £59,999	4,504	1,548	2,005	2,874	3,980	5,476	7,505	9,223
£60,000 to £69,999	4,754	1,658	2,130	3,044	4,216	5,793	7,880	9,761
£70,000 to £99,999	5,241	1,828	2,410	3,419	4,702	6,405	8,750	10,793
£100,000 to £149,999	6,361	2,218	2,955	4,149	5,652	7,805	10,711	12,999
£150,000 and over	7,924	2,830	3,751	5,246	7,163	9,928	13,293	15,545

Notes: This table presents energy bills by household income and energy consumption percentiles using the Ofgem October 2022 price cap which was not implemented but replaced by the Energy Price Guarantee (EPG).

Table 3 – Projected Energy Bills in £ per year under Energy Price Guarantee as implemented by UK government

		Energy consumption percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	2,864	916	1,203	1,761	2,502	3,517	4,941	6,173
Less than £15,000	2,198	704	916	1,354	1,887	2,677	3,813	4,792
£15,000 to £19,999	2,457	789	1,056	1,515	2,137	2,991	4,124	5,168
£20,000 to £29,999	2,662	885	1,162	1,675	2,352	3,216	4,414	5,445
£30,000 to £39,999	2,854	947	1,268	1,826	2,547	3,463	4,736	5,818
£40,000 to £49,999	2,994	1,087	1,364	1,945	2,687	3,637	4,951	6,053
£50,000 to £59,999	3,144	1,139	1,450	2,041	2,793	3,808	5,177	6,334
£60,000 to £69,999	3,315	1,214	1,535	2,157	2,954	4,023	5,433	6,699
£70,000 to £99,999	3,647	1,330	1,727	2,414	3,285	4,440	6,025	7,400
£100,000 to £149,999	4,409	1,597	2,100	2,913	3,935	5,394	7,353	8,888
£150,000 and over	5,468	2,014	2,644	3,662	4,964	6,832	9,090	10,593

Notes: This table presents projected energy bills by household income and energy consumption percentile using the Energy Price Guarantee policy announced electricity and gas prices.

Table 4 – Counterfactual Energy Bills in £ per year under alternative Two-Tier Tariff proposal

		Energy consumption percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	2,514	513	651	927	1,854	3,734	6,354	8,614
Less than £15,000	1,274	412	513	726	986	2,174	4,254	6,034
£15,000 to £19,999	1,754	454	584	806	1,235	2,754	4,834	6,734
£20,000 to £29,999	2,134	500	634	885	1,574	3,174	5,374	7,254
£30,000 to £39,999	2,494	526	685	961	1,934	3,634	5,974	7,954
£40,000 to £49,999	2,754	597	731	1,023	2,194	3,954	6,374	8,394
£50,000 to £59,999	3,034	618	772	1,094	2,394	4,274	6,794	8,914
£60,000 to £69,999	3,354	655	814	1,275	2,694	4,674	7,274	9,594
£70,000 to £99,999	3,974	710	906	1,694	3,314	5,454	8,374	10,894
£100,000 to £149,999	5,394	839	1,253	2,634	4,534	7,234	10,834	13,634
£150,000 and over	7,354	1,132	2,134	4,034	6,454	9,894	14,014	16,734

Notes: This table presents projected energy bills by household income and energy consumption percentile using a two-tier energy price tariff as guidance. This two-tier tariff sees energy prices fixed at pre-war levels for the first 2,500 kWh of electricity and the first 9,500 kWh of gas. The standing charge is also fixed at pre-war levels. Energy above the allowance is priced at a rate modestly steeper than the October 2022 Ofgem price cap.

Table 5 – Energy Bills increase Oct 2021 relative to what bills would be under the EPG by household income and energy consumption

		Energy consumption percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	1,368	403	552	833	1,203	1,699	2,375	2,951
Less than £15,000	1,036	291	403	627	902	1,285	1,811	2,251
£15,000 to £19,999	1,162	335	472	709	1,021	1,436	1,968	2,439
£20,000 to £29,999	1,263	385	528	790	1,128	1,549	2,112	2,582
£30,000 to £39,999	1,362	421	584	865	1,222	1,674	2,274	2,775
£40,000 to £49,999	1,431	490	634	922	1,291	1,756	2,381	2,894
£50,000 to £59,999	1,506	521	677	971	1,347	1,843	2,493	3,032
£60,000 to £69,999	1,593	558	721	1,033	1,428	1,950	2,624	3,213
£70,000 to £99,999	1,762	620	820	1,164	1,597	2,162	2,919	3,558
£100,000 to £149,999	2,144	757	1,013	1,425	1,933	2,643	3,566	4,265
£150,000 and over	2,659	970	1,293	1,806	2,451	3,341	4,371	5,031

Notes: This table presents projected change in energy bills by household income and energy consumption percentiles between October 2021 Ofgem pre-war prices and the prices under the energy price guarantee. The vast majority of households see notable increases in their energy bills with effects relative to Table 2.

Table 6 – Energy Bills Increase in £ from Oct 2021 with the Two-Tier Tariff by household income and energy consumption profile

		Energy consumption percentiles						
	Mean	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
All dwellings	1,018	0.00	0.00	0.00	554.27	1915.72	3787.52	5391.42
Less than £15,000	113	0.00	0.00	0.00	0.00	782.32	2252.27	3493.47
£15,000 to £19,999	459	0.00	0.00	0.00	119.48	1199.27	2677.47	4005.22
£20,000 to £29,999	734	0.00	0.00	0.00	349.57	1506.32	3071.07	4391.27
£30,000 to £39,999	1,002	0.00	0.00	0.00	609.22	1844.97	3512.07	4911.27
£40,000 to £49,999	1,191	0.00	0.00	0.00	798.12	2073.02	3803.32	5234.12
£50,000 to £59,999	1,396	0.00	0.00	24.68	947.87	2309.32	4110.37	5611.92
£60,000 to £69,999	1,632	0.00	0.00	151.08	1168.37	2600.57	4464.82	6107.87
£70,000 to £99,999	2,089	0.00	0.00	444.37	1625.17	3175.52	5267.82	7052.37
£100,000 to £149,999	3,128	0.00	166.88	1145.72	2531.22	4482.72	7046.22	9010.72
£150,000 and over	4,545	87.88	783.72	2177.47	3940.77	6402.62	9294.42	11170.97

Notes: This table presents projected change in energy bills by household income and energy consumption from October 2021 relative to a two-tier energy price tariff as guidance. This two-tier tariff sees energy prices fixed at pre-war levels for the first 2,500 kWh of electricity and the first 9,500 kWh of gas. The standing charge is also fixed at pre-war levels. Energy above the allowance is priced at a rate modestly steeper than the October 2022 Ofgem price cap The vast majority of households is financially better off compared to the energy price guarantee (EPG) despite this policy coming at a similar fiscal price tag.

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