NEW ECONOMICS FOUNDATION

THE NATIONAL ENERGY GUARANTEE

A LONG-TERM POLICY TO PROTECT ESSENTIAL ENERGY NEEDS, REDUCE BILLS AND CUT CARBON

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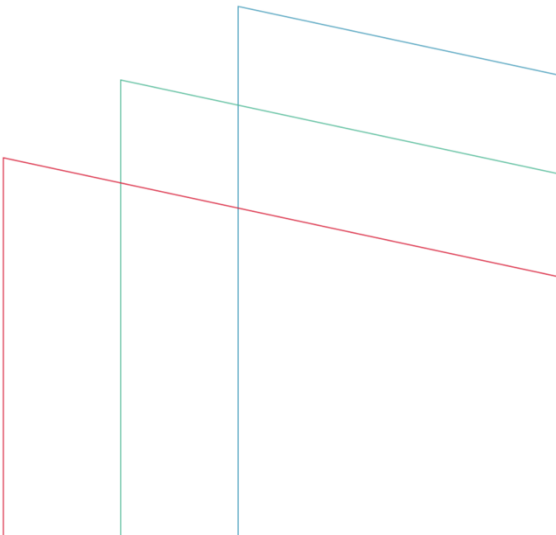

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1. EXECUTIVE SUMMARY

The Russian invasion of Ukraine and the UK government's failure to reduce domestic reliance on gas have combined to exert exceptional pressure on household finances. While wholesale energy prices have begun to soften, the early withdrawal of government support means households continue to battle extraordinary budgetary pressure. Meting out the pain is our current energy market and billing system, which fails to protect communities' essential needs, leaving many households with an impossible choice between heating or eating, and over 40% unable to afford a decent standard of living.

Current government support for energy bills fails households on four important tests: (i) putting protections around minimum essential energy needs, (ii) providing stability and confidence in future bills, (iii) driving equitable outcomes between social groups, and (iv) speeding up progress against our climate goals. By April 2024, even the existing inadequate support will be gone, yet NEF analysis suggests that bills could still be as much as 70% (£900) above pre-crisis (2021) levels, potentially leaving some of the lowest-income households spending up to 25% (£2,100) of their disposable income (after housing costs) on energy.

Given the failures of the current energy billing system, a new approach is needed. Our review of the proposed options suggests that a system which protects essential energy needs at a free, or low cost, while applying a premium to higher levels of usage (sometimes termed a 'rising block tariff' or RBT) has a range of advantages. Notably, under our proposed version of an RBT, all households can benefit from a safety net placed under their essential energy needs. Meanwhile, the premium price band, which is primarily paid by wealthier households, acts as an incentive for domestic investment in energy efficiency and renewables.

In this paper, we explore the potential of our proposal, a 'national energy guarantee' to deliver on household needs and meet our four policy objectives (i–iv). We present our system in two illustrative forms, one involving three price tiers, and one involving two. These tiers are designed to ensure that a minimum allocation of energy, estimated to be around the level required to power the essentials, is priced at 50% below pre-crisis levels. We show how the price of this essential energy band can be protected, even at the current, exceptional market price levels.

To ensure that our proposed premium price tier does not deliver negative outcomes for high-energy-using, low-income households, we show how our proposals might be married with an easily implementable set of allowances and an inexpensive social tariff.

Our resulting package can deliver highly progressive and extremely well-targeted outcomes. Indeed, under normal (pre-crisis) conditions, 80% of households are winners from our proposal, with by far the largest gains – £250 on average – seen among the poorest 30% of the population.

With energy prices considerably higher than in 2021, it is too soon to withdraw government support to households. Today, and heading into 2024, further direct support with bills is needed. Our proposed system provides a more efficient and effective system for getting government help where it is needed. By freezing the cost of our lower tariffs – tariffs which are pegged specifically to essential energy needs – and only allowing prices to rise in the premium band, we can deliver not only fairly distributed support, but also an added incentive for decarbonisation efforts. At a cost similar to the revenue expected from the government's recent windfall taxes on energy producers (£8bn–£10bn), a system is possible that delivers bill reductions for 94%–98% of households, and even brings bills for over 70% of the lowest-income households down below their pre-crisis (2021) level, despite the prevailing wholesale costs.

A key feature of our national energy guarantee is not only its protections and support for those on low incomes but also its potentially game-changing impact on national decarbonisation progress. Incentivising richer households to accelerate investment in home energy efficiency and renewables is an urgent priority. Both of our proposed schemes deliver reductions of 20–30% on the average payback time on such investments under pre-crisis (2021) conditions and, for households consuming energy from the premium band, far greater incentives during periods of elevated prices. To cement this progress, and offer support to households in difficulty, we propose a system in which a household's impending entrance into the premium tariff band acts as a trigger for action from an energy supplier, and the dispatch of a retrofit coordinator capable of advising a household on the potential options for reducing their bill.

Reform is urgently required to the UK's energy billing system, as well as sustained financial support to households facing fuel poverty. A national energy guarantee provides a rare opportunity to meet this need in a cost-efficient way, simultaneously putting a safety net under all households, fairly distributing support to the least well-off, and driving progress on decarbonisation.

2. THE UK'S APPROACH TO ENERGY BILLS IS ENTRENCHING INEQUALITY

Even before the 2022 spike in energy prices, the UK's energy supply system or market was failing to deliver. The government's supposed energy price cap functioned as a 'price guide' with the bills of some 11 million households effectively pegged to it.[1] Recent events have further exposed the weaknesses of the UK's approach to energy billing. The Russian invasion of Ukraine and the UK government's failure to reduce domestic gas dependence, have driven over half of all UK households into fuel poverty (defined by these authors as spending more than 10% of their net income on fuel).[2]

The wider cost of living crisis is a social catastrophe. On the current course for earnings, inflation, and wider income, NEF forecasts estimate that 43% of all UK households will not be able to afford a decent standard of living by the next general election – an increase of more than 3.5 million families since the 2019 election.[3] In the meantime, even those households not set to struggle permanently can expect a bumpy ride as the blunt, stop-start, financial support mechanisms employed by the government wax and wane.

The first cliff edge facing households will be in April 2023, when the Energy Bills Support Scheme, which has deducted £400 from every household's winter bill, comes to an end. Households will fall back first on the energy price guarantee (EPG), then on the energy price cap, but in both cases, the average effective bill experienced is likely to remain above £2,000, almost double its early 2021 level. As most energy retailers aim to smooth monthly energy bills across the year, this pain will be more than just a winter phenomenon.

While the EPG and price cap will protect households from some of the excesses of the wider energy wholesale market, as policies they are poorly targeted. Fixing, or capping, the unit rate paid on electricity and gas is regressive. These approaches provide larger cash sums to higher-consuming households, and these households are found more commonly in the higher-income deciles. As can be derived from Table 1, other things being equal, our analysis suggests the EPG results in around 36% more cash flowing to the top 10% of households, by income, than the bottom 10%.

A further downside of both the EPG and price cap policies is their counterproductive impact on the incentive for households to decarbonise. By cutting the unit rate paid on gas and electricity, the incentive for households to pursue decarbonisation initiatives

such as insulation and solar panels is reduced. This is most significant for those wealthier households with the financial means to invest in their homes.

Table 1: Distributional impacts of two government energy market interventions

Equivalised household income decile	Value of the EPG distributed across income deciles	Proportion of households in each decile supported by a benefit-linked Cost of Living Payment
1	9.5%	54%
2	9.5%	49%
3	9.1%	38%
4	9.3%	26%
5	9.3%	18%
6	9.7%	9%
7	9.9%	5%
8	10.4%	4%
9	10.6%	2%
10	12.8%	1%

Source: NEF analysis of the LCFS survey

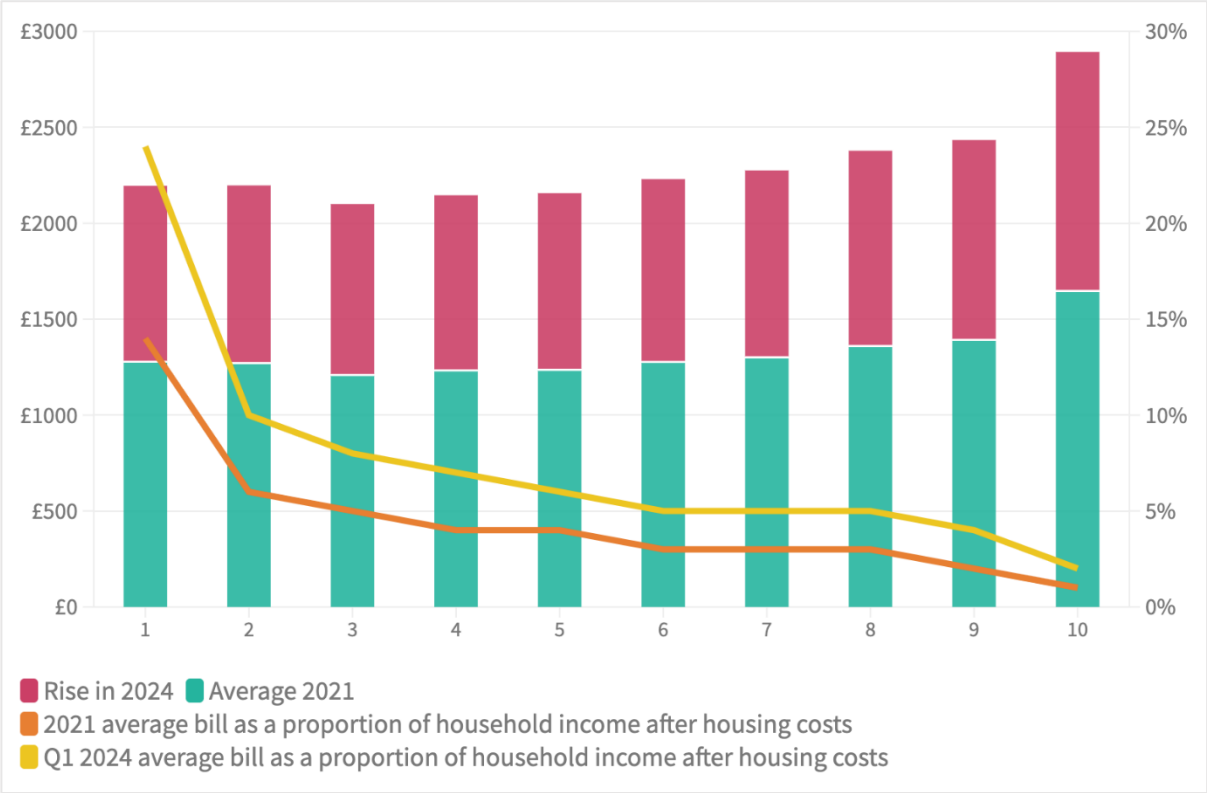
While the government's Cost of Living Payment – worth approximately £50 per month to all households on means-tested benefits – has a longer life, running until spring 2024, and is more progressively distributed, it is not without its issues. This support mechanism presents a second kind of cliff edge: the move on and off means-tested benefits. Households falling just outside eligibility for means-tested benefits (even those missing eligibility by only a few pounds of income or savings) could miss out on up to £900 of additional support thanks to the structure of the current support schemes.[4] Furthermore, the scheme lacks any targeting to need, meaning that some higher-energy-using households, particularly those not on benefits, may receive far less money than they need to afford a decent standard of living, while some lower-energy-consuming households receive far more.

With both the EPG and the Cost of Living Payment set to end in spring 2024, a key moment for sector reform is just over a year away. Current indications suggest that prices will still be elevated well above their pre-crisis level in Q1 2024. NEF analysis suggests that, for the average household, energy bills will still be consuming around 8% of household income (after housing costs) in Q1 2024, around two-thirds (66%) higher than their average share in 2021 (prior to Russia's invasion of Ukraine), worth around

£1,000 in cash terms (Figure 1). At the whole-economy level, this rise means an increase in household bills worth around £22bn versus the 2021 average bill.

For the lowest-income households, the burden will be significantly greater, with energy consuming almost 24% of household income (after housing costs) in the bottom-income decile. This leaves an extraordinarily large gap in the proportion of household income after housing costs spent on energy between the top and bottom deciles, rising from 12 percentage points in 2021 to 22 in 2024.

Figure 1: Energy bills in absolute (£) terms and as a proportion of household income after housing costs by equivalised household income decile in 2021 and (forecast) in 2024



Source: NEF and Friends of the Earth analysis of the LCFS survey and IPPR tax-benefit model

3. KEY PRINCIPLES FOR A REFORMED ENERGY RETAIL SYSTEM

Energy represents a fundamental requirement for a good quality of life and underpins aspects of an individual's human rights. The system is also fundamental to meeting our climate change decarbonisation goals. With this in mind, the design of our energy billing system should first be based on a set of fundamental guiding principles, with matters of costs, pricing, and markets as secondary considerations. Our proposed energy system is based on the following objectives:

- **Ensuring a good standard of living for all households, not just those with financial means.** Low income does not mean low worth. Essential energy should be protected for all. Enrolment in means-tested benefits is an indicator of low income but is not a comprehensive indicator for identifying potential fuel poverty. A reformed energy billing system must also protect groups on low incomes that are less likely to be enrolled in benefits, such as individuals with no recourse to public funds, working individuals without children, and the self-employed.[5]
- **Resilience and stability to withstand shocks.** A feature of both the wider energy market conditions and the government's support to households over the past three years has been its stop-start nature, sharp penalties, and unequal impacts between different household types. This has created left-out groups and seen middle-income households' living standards fluctuate greatly. Our energy system should have built-in resilience and stability, and provide a comprehensive safety net for all people.
- **Fairness at its core**. Inequity between social groups, regions, and wealth levels is a constant blight in the UK, and the recent spike in energy prices is yet another driver. Energy prices have contributed to lower-income groups experiencing the fastest rates of inflation, while government support packages have disproportionately benefited higher-income households.
- **Giving the right (green) signals**. The need to decarbonise our energy system is more urgent than ever. As it stands, the energy billing system performs poorly in incentivising households to make decisions which accelerate decarbonisation – in fact, the cost of the net zero transition is being paid disproportionately by lower-income groups. Sector tax structures penalise electricity more than gas, and the pricing system could do more to encourage able-to-pay households to invest in renewable electricity and energy efficiency.

4. REDESIGNING THE ENERGY BILLING SYSTEM AND WHY WE NEED A NATIONAL ENERGY GUARANTEE

Over the past six months, there has been a wide range of proposals for change to the energy billing and support system. These range from very simple alterations to the existing approach to new, more complex targeting mechanisms. The proposals put forward include the following:

- **Systems limited to benefits-based targeting**. Multiple systems have been proposed which provide additional support to households that are registered on the benefits systems. These range through (i) flat top-up payments, (ii) percentage reductions on bills, and (iii) alternative tariffs. These systems support low-income households but are poorly targeted to need, and leave a cliff edge in support at the benefit eligibility threshold.
- **Broader social tariffs.** Recognising the strain being placed on all households, and the cliff edge currently experienced at the benefit-eligibility threshold, some have proposed more universal support packages. This includes rolling out a new means test, through energy suppliers or otherwise, to deliver wider eligibility for a reduced tariff.[6] These tariffs can be effective in principle but can present significant administration and targeting problems if they are to reach all of those households in need. It is unclear by whom, or how, a new means test might be administered, and whether it would feel fair to the majority.
- **Universal payments.** Other groups have proposed making a fixed lump sum rebate to all households priced at the difference between an affordable threshold and the price cap (which in this case does not perform as a price cap but as a guide to the going market rate).[7] This mechanism is similar to the EPG, but has the added benefit of keeping the decarbonisation incentive provided by the higher prices. Using a lump sum payment, however, leads to an outcome which is poorly aligned with need (or 'rough justice' as the authors refer to it), benefiting low-energy-consuming households significantly.

In most cases, a feature in common between different schemes is their combination with proposed additional targeted support to groups of households either with special additional energy needs or particularly low incomes. This includes payments to those on benefits, living with disability, and/or with children (assessed through child benefit

eligibility). Many have proposed resourcing a hardship fund for households that fall through the cracks in the system.

One of the more challenging areas discussed has been the idea of tailoring support to a household's EPC rating (ie its energy efficiency), thereby ensuring support matches need, but significant data and implementation challenges stand in the way of such an approach.

None of these proposals, however, adequately address the aforementioned principles that should underpin the retail structure of the energy system. First, the ongoing energy crisis has exposed a severe public health issue with millions of people who are energy starved in the winter. Citizens Advice estimated that 2 million people were disconnected from their energy supply at least once a month over the last year and 20% of those households on prepayment meters have gone without energy for more than 24 hours at least once.[8] Everybody across industry, government, and civil society acknowledges that energy is an essential good and nobody should ever face energy starvation – which is precisely what the current price shock has resulted in.

Second, unit price caps, lump sum payments, or rigid social tariffs do little to incentivise energy demand and carbon reduction. As we transition to a low-carbon economy, economic signals must be largely aligned with that outcome while protecting those who might be unable to respond to price signals. Exposing high-energy users in the higher-income group to market or above market rates will incentivise behaviour change and also have positive knock-on effects on reducing system-wide costs.

Third, long-term public subsidy-oriented solutions are consistently vulnerable to political whims and broader economic pressures. Issues such as fuel duty offer an example of politically fraught policies, with the government unable to make the necessary changes without significant political fallout.

As we gradually emerge from the current crisis, we need to put in place a more enduring framework that satisfies these principles while also considering the economic and political implications. We argue that a new national energy guarantee programme can provide that long-term framework.

National energy guarantee. NEF and others have proposed an approach that is sometimes referred to as a rising block tariff (RBT). This approach involves applying different marginal prices for energy which vary depending on a household's level of consumption. The first block of consumption is typically charged at low rates, or given for free, while higher consumption is charged at higher prices. The advantage of this model is that it secures a basic level of consumption, or a safety net for all households at

an affordable price (or for free), preferably aligned with minimum needs. The counterbalance is that high-consuming households pay a premium. An outstanding question is to what extent this hurts less-well-off households. Again, the system can be combined with social tariffs or cash support to ensure the effects are well-targeted, but doing so also adds complexity.

Overall, this scheme has significant advantages over rival designs in terms of the underlying tariff structure. It enables policy to blend a powerful form of targeted bill reduction that, on average, supports those on lower incomes far more than those on higher incomes, while at the same time increasing incentives to reduce energy consumption and improve energy efficiency, particularly among higher-income households. In this paper, we explore the proposal in further detail, with new modelling to test different options for its design and rollout from 2024 when the EPG expires.

5. ESTIMATING ESSENTIAL ENERGY TO BE GUARANTEED

Energy, as a means to accessing food and heat, as well as a range of other life support systems, is an everyday essential. While the current energy billing system operates far from a free market (indeed, presently it lacks virtually any private sector competition), the system nonetheless puts a significant financial cost on survival.

Establishing a universal minimum energy requirement is a challenging task. Different household and house types, locations, and builds cause significant variability in people's energy needs. However, implementing some form of protection for a best estimate of minimum needs is better than operating no protection, and leaving households just one stroke of bad luck away from a choice between heating or eating.

We have calculated a crude estimate of an average household's minimum electricity and gas needs. These estimates are illustrative only and would need considerable further refinement, but we use them here to test sensitivities in our policy modelling. First, to establish the average household's minimum electricity requirement for a decent standard of living, we gathered data from the Energy Savings Trust on the electricity consumption of a household's essential appliances. Included in this calculation were a fridge-freezer, washing machine, oven and hob, kettle, lighting, one phone, and one computer. The average use of these appliances was estimated to require 2,100 kWh of electricity per year, around 72% of the actual average national consumption. Consumption needs are higher among households using electricity for heating – this group is discussed separately later on.

Establishing a minimum gas requirement was more difficult. Mains gas demand varies significantly depending on house design, and indeed some households use no mains gas at all, for example using oil, biomass, or bottled gas. Here, we focused on the needs of households operating a standard dual-fuel setup. We calculated the average mains gas consumption intensity per square metre of a UK home. On this basis, we then calculated the approximate gas demand required to heat two rooms of average size (this comes to around 70% of the average property size of the bottom 20% income group, based on the Index of Multiple Deprivation).

Using two rooms of average size as our minimum gas requirement allowed some flex in the calculations for those homes that operate below average efficiency, and for the fact that it is usually less efficient to only partially heat a home. With this allowance, households should, at least, be able to heat either two smaller rooms or one decently

sized living space. We arrive at an estimate of 5,400 kWh of gas per year, around 45% of the actual average national consumption. We did not disaggregate heating and hot water, and as such the base assumption effectively also allows for 45% of typical hot water usage.

We acknowledge that our estimates represent little more than survival-level energy needs for an average household, ie less than the level required for a decent standard of living, which should be the ultimate goal of all public policy. In addition to the basic areas of energy consumption considered, households with specific characteristics will have additional needs. Notably, households with children or residents with disabilities may have unavoidable additional energy consumption needs. Households are given additional top-ups based on these requirements in our subsequent analysis. In the following analysis, we test the potential for an energy billing system which puts a safety net under a household's survival-level energy needs.

6. DESIGN OF THE NATIONAL ENERGY GUARANTEE

We tested the impact of shifting to a national energy guarantee (ie RBT) model for billing energy usage. Our initial modelling uses electricity and gas prices from the October 2021–March 2022 price cap period, the last available pre-crisis datapoint, alongside household consumption data from the Living Costs and Food Survey years 2016–17 to 2019–20, inclusive. Using detailed respondent data, and this larger, multi-year, sample size, we can improve the accuracy of our estimates of energy consumption across equivalised household income deciles compared with previous analyses. However, our data does not factor in the energy use changes which are likely to have unfolded over the past six months in response to the exceptionally high prices.

Table 2 and Table 3 show our tested price tariffs under two different approaches to the guarantee. Both of these tariffs ensure that the average household receives a 50% cut, compared with Q4 2021 prices, to the cost of their essential energy requirement. This is achieved through two approaches:

- Our three-tier system (Table 2) provides 50% of the essential household energy requirement for free. Usage up to the national average level of consumption is then charged at the Q4 2021 market rate. The top premium tariff comes in at 30% above the 2021 market price. This system also ensures that any household consuming at the national average level of consumption will see a reduction in their total bill.

Table 2: Energy price tiers in a proposed RBT billing system

Electricity tiers (kWh)	Electricity prices	Change vs October 2021 price cap	Gas tiers (kWh)	Gas prices	Change vs October 2021 price cap
<1,050	free	-100%	<2,700	Free	-100%
1,051–2,900	21p	0%	2,701–12,000	4p	0%
2,901+	27.3p	+30%	12,001+	5.2p	+30%

- Our second tariff structure (Table 3) operates only two prices. The first applies up to the essential energy requirement threshold and provides energy at 50% below the Q4 2021 price, and the second, premium tariff, charges 20% above. Again, anyone consuming at the national average level of consumption will see a reduction in their bills.

Table 3: Proposed pricing tiers of a two-tier RBT system

Electricity tiers (kWh)	Electricity prices	Difference to 2021	Gas tiers (kWh)	Gas prices	Difference to 2021
0–2,100	10.5p	-50%	0–5,400	2p	-50%
2,101+	25.2p	+20%	5,401+	4.8p	+20%

Before the present cost-of-living crisis, the UK government operated several schemes designed to help lower-income households avoid fuel poverty. Pre-crisis, these schemes, including the Warm Homes Discount, Winter Fuel payments, and cold weather payments, were worth in the order of £2.4bn per year. At the start of 2023, responding to continued extreme energy prices, the government announced over £7bn of further support to households on means-tested benefits over the coming year.

Our two test cases, which look at the energy system as it was in 2021, test a package which costs a similar amount (£2.4bn) per year to the existing support systems. The underlying tariff structures are close to cost-neutral, but the addition of several further supports including allowances and a social tariff, increases its cost. These support mechanisms could, partially, replace some of the government's existing support mechanisms. They include:

- An exemption for all households in receipt of means-tested benefits from the top pricing tier of the RBT model.
- An additional free energy allowance provided to households with children (per child), and to households with a disabled resident. These allowances were set at an additional 50% of the free energy block provided in our first tariff structure (Table 2) for households with disability and an additional 25% of the basic free block of energy (Table 2) for each additional child. When applied, these allowances also lift the thresholds at which higher tariffs are triggered, meaning the discount is initially applied to any premium-priced energy use. Under our two-tier scenario, the allowance increases the amount of energy a household can use at a lower, cheaper, price, rather than providing free energy, but the block of energy is twice as large (ie 100% for disability and 50% per child of the free allocation in Table 2). Electricity and gas are given the same treatment.

Both policies deliver outcomes where a high proportion of billpayers are better off (ie a high 'win rate') relative to the existing system. The three-tier system leads to bill reductions for 81% of the population and the two-tier system delivers savings for 78% (Table 4). The two-tier system delivers slightly fewer winners but their wins, ie their bill

reductions, are greater. Win rates are significantly higher at the lower-income end of the spectrum, with 90% and 91% of households in the bottom decile winning from the three- and two-tier systems, respectively.

Table 4: Impact of two policy options on household energy bills, by equivalised income decile

	Proportion of population winning from policy		Average bill change		Average bill change of winners		Average bill change of losers	
Equivalised household income decile	**Three-tier RBT**	**Two-tier RBT**	**Three-tier RBT**	**Two-tier RBT**	**Three-tier RBT**	**Two-tier RBT**	**Three-tier RBT**	**Two-tier RBT**
1	90.2%	90.7%	-£235	-£315	-£295	-£379	£190	£159
2	88.8%	87.7%	-£220	-£283	-£283	-£355	£221	£179
3	88.9%	86.9%	-£207	-£241	-£268	-£309	£195	£155
4	85.9%	83.7%	-£179	-£188	-£250	-£264	£225	£182
5	83.3%	80.7%	-£164	-£154	-£245	-£238	£206	£166
6	80.2%	77.0%	-£138	-£119	-£231	-£213	£217	£177
7	78.9%	74.8%	-£120	-£92	-£227	-£196	£252	£199
8	77.7%	72.7%	-£104	-£82	-£214	-£191	£253	£192
9	75.0%	69.8%	-£85	-£54	-£210	-£175	£272	£210
10	63.5%	59.0%	£9	£26	-£212	-£168	£364	£283
Average of all	81.1%	78.2%	-£144	-£150	-£246	-£256	£256	£202

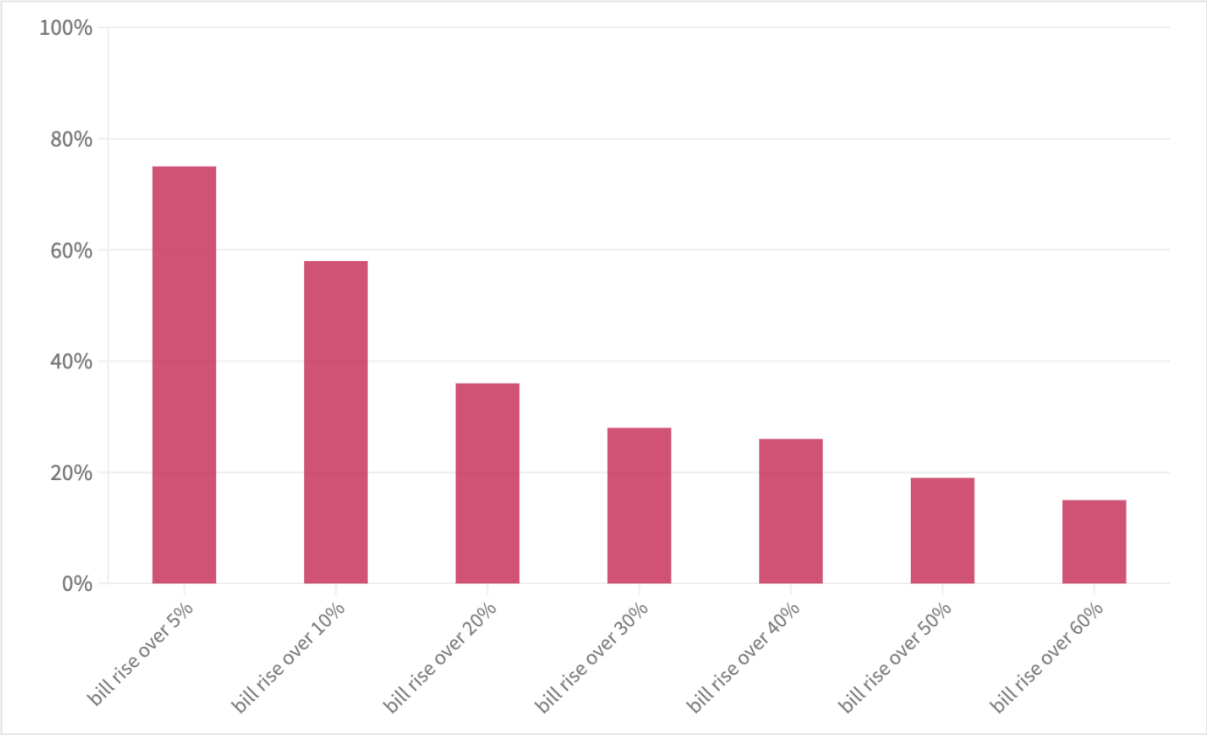
Source: NEF and Friends of the Earth analysis of the LCFS survey

A significant advantage of both approaches is that the presence of a higher, premium, tariff, creates a significantly greater incentive for households to invest in energy efficiency and activities which reduce the carbon impact of their home. Households consuming significant amounts of energy in the highest premium tier, will see the payback period on a solar installation, for instance, fall by between 20% and 30%. For a typical domestic solar and battery installation, this could cut payback times from 14 years to 11 years (illustrative). In addition, the act of moving into the higher premium band, particularly under our three-tier model, can act as a trigger for energy efficiency support to be provided to a household by the energy supplier.

A potential weakness of the policy proposal is that a small minority of lower-income households experience a bill increase. These are households with very high energy usage. Figure 2 shows the relative bill change experienced by the minority of households

(<10%) in the low-income group that are 'policy losers'. This data should be treated with great caution due to the small sample sizes involved and the potential influence of outliers. This indicates that just over half of the loser group would experience a bill rise of over 10%.

Figure 2: Average proportionate bill change experienced by low-income households (ie bottom equivalised household income decile) in the 'policy loser' group under a three-tier policy



Source: NEF and Friends of the Earth analysis of the LCFS survey

Several caveats apply when considering the risks to this group:

- Some of the respondents in this category will represent survey outliers and may not be accurate and/or representative of the UK population.
- Some of the respondents in this category will be able to reduce their consumption at least partially without a significant impact on their living standards (and may already have done so as a result of the recent energy price spike).
- Some of the respondents in this category will be eligible for benefits (and hence a reduction in their bill) but not claiming benefits or recorded as claiming benefits, in the survey. Elsewhere, NEF has argued for a new system of auto-enrolment in means-tested benefits to help address this problem.[9]

- All households benefit from a safety-net level of energy consumption provided by our proposed structure and as such any negative ramifications of the policy for households can be avoided if a household can reduce their consumption to just above the national average.

After controlling for these factors, the remaining group of low-income high-energy-using households who are losing out from the policy is likely to be very small. Nonetheless, this group should be targeted with additional targeted discretionary support, such as through a local-authority-led crisis fund. Alternatively, the government might simply increase its level of support for the whole scheme, such as by lifting the trigger point of the premium tariff.

As shown in Table 4, the size of savings on energy bills could be as high as £235 for the lowest-income decile in 2021 prices. It is arguable whether greater protection in terms of bill savings needs to be ensured for specific target groups. We model an additional scenario where on top of the RBT approach, an enhanced social tariff, funded by the government is offered.

This scenario borrows Age UK's targeting group that includes all households on some form of income-related means-tested benefits, attendance allowance, carers allowance, Disability Living Allowance (DLA)/Personal Independence Payment (PIP) alongside households determined to be living in relative poverty. [10] They estimate that this targeting covers roughly 10 million households as the beneficiary group. Our scenario then assumes that all of the essential energy is provided at no cost to these consumers. We estimate that in 2021 prices, this enhanced social tariff could cost an additional £4.1bn while saving £650 per average household.

Our modelling retains the standing charges currently levied on energy bills which are paid by all consumers irrespective of their consumption levels. If these charges were dropped, the aforementioned beneficiaries would benefit by another £171 in 2021 prices at an additional cost of over £1.6bn to the government or the energy suppliers.

However, maintaining such a high level of subsidy could prove to be unsustainable over the long term. Many have argued that revenues from windfall taxes or similar sources could fund these bill reductions but revenues from these sources may well decline in future. There is a compelling case for a new, permanent, higher headline tax on oil and gas production firms that have profited hugely from the war in Ukraine but we remain wary of pegging support for households to a highly volatile source of government revenue.

7. ADDRESSING THE IMPACTS ON HOUSEHOLDS OFF THE GAS GRID

An estimated 2 million households in the UK consume all of their energy in the form of electricity. A further 2 million use an alternative hydrocarbon for heating their homes (eg oil or biomass). These households are a key group not included in our analysis – a group which is slightly more likely to experience fuel poverty.

To decarbonise the UK economy, almost all households will need to switch their main heating fuel away from gas, most to electricity. Switching those households using carbon-intensive fuels such as oil is also a particular priority. Any future energy billing system should ensure that all-electric households are protected, and indeed that an all-electric transition is encouraged.

To this end, we explored options for how an RBT model might support and incentivise all-electric households. At this stage, we have only tested the three-tier model of our policy proposal. A critical step was to explore how energy allocations afforded for gas use might be transferred across to the electric tariff for all-electric/non-gas households.

Our modelling tests a policy which brings both the free allowance and second mid-tariff block of gas across to electric at a ratio of 1:2 for all-electric households and 1:5 for households with a carbon-intensive heating fuel such as oil. This differential is deliberately designed to make the shift to renewable electric heating more cost-effective for households.

As shown in Table 5, win rates remain very high. Across this 4-million-household sub-group, 78% are winners from the policy, while 88% are winners among the lowest-income decile. Among households using an electric heat source, win rates are on average 16 percentage points higher, topping 95% in the lower-income deciles. The average cost to the government of this proposed package comes in at around £170 per household, slightly higher than the cost of the dual-fuel package, which costs around £145 per household (this cost primarily relates to the allowances provided, and provision of a social tariff for benefit claimants).

Table 5: Proportion of households among the sub-group not using dual fuel that are winners from the policy

Equivalised household income decile	All households not on dual fuel	Electric-only households	Other heating source households
1	88%	95%	91%
2	87%	98%	90%
3	83%	96%	87%
4	81%	95%	88%
5	77%	94%	85%
6	77%	88%	86%
7	79%	93%	90%
8	68%	94%	84%
9	70%	91%	80%
10	66%	94%	78%
Average	78%	94%	86%

Source: NEF and Friends of the Earth analysis of the LCFS survey

8. ROLLING OUT A NATIONAL ENERGY GUARANTEE FROM APRIL 2024

The current energy bill support systems are due to come to an end in April 2024. For most households, support has already begun to phase out but fixed cash payments to households in receipt of means-tested benefits will continue until early 2024. Support levels to date have been insufficient to prevent energy bills from reaching extraordinary levels. Households at the lower-middle-income level, not receiving benefits, will experience particularly acute pressures over the next 12 months.

Current evidence suggests that energy prices will fall considerably from the recent peaks but not have returned to pre-Ukraine-invasion levels by April 2024. Our analysis (Table 6) suggests bills could still be as much as 70% above their average level in 2021, the year before Russia's invasion of Ukraine. Much uncertainty remains, but this estimate forms the basis of our subsequent analysis. At these levels, and in the face of multiple other significant pressures on household income and expenditure, communities will continue to suffer. There is a critical need for further government support.

Table 6: Q1 2024 NEF forecast market energy prices

Electricity prices (p/kWh)	Gas prices (p/kWh)
29p	7p

Fortunately, the government has access to significant resources to support households to cope with these continued elevated prices. The Treasury estimates that in the financial year 2024/25 some £8.9bn will be raised from its recent levies (i.e. windfall taxes) on energy producers.[11] The Labour Party, and other commentators, have proposed tweaks to the Energy Profits Levy such that it could raise over £10bn. These figures compare to our forecast of a whole-economy rise in annual bills versus the 2021 average of £22bn. The government has the scope to significantly reduce this cost.

We explored the potential impact of a household energy bill subsidy at two levels of government expenditure (£8bn/£10bn) distributed via our two proposed energy billing systems to improve social outcomes. In this scenario, prices on the bottom two tariffs (or bottom single tariff in the case of the two-tier system) are set at the same level as in our 2021 simulation (Table 2 and Table 3). However, to increase the incentive for high-use households to cut usage during the crisis, and to reduce the resulting level of government subsidy, the premium price tariff is increased, as shown in Table 7. The

higher the subsidy the government is willing to put into the system, the smaller the required increase in the top price tariff.

Table 7: Top or premium energy price tariffs in two proposed RBT billing systems in Q1 2024

Additional subsidy provided	System	Electricity tiers (kWh)	Electricity prices	Change vs October 2021 price cap	Gas tiers (kWh)	Gas prices	Change vs October 2021 price cap
£8bn	Two-tier	2,101+	46.2p	+120%	5,401+	8.8p	+120%
	Three-tier	2,901+	63p	+200%	12,001+	12p	+200%
£10bn	Two-tier	2,101+	39.9p	+90%	5,401+	7.6p	+90%
	Three-tier	2,901+	53p	+150%	12,001+	10p	+150%

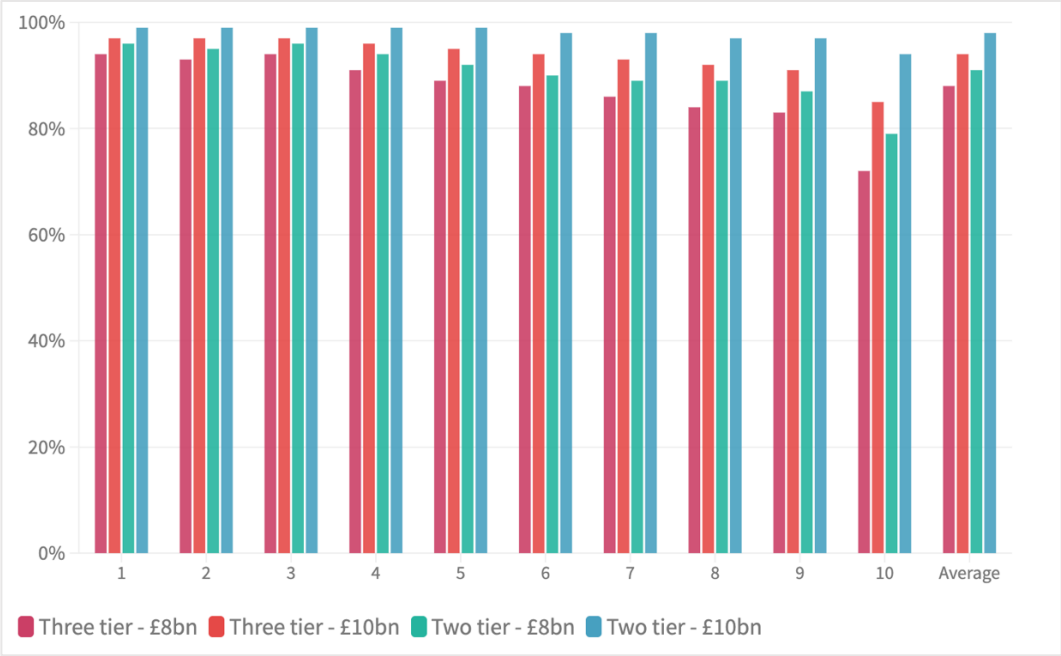
Our policy proposals can deliver wins for the vast majority of households versus their expected bill in Q1 2024 (Table 8 and Figure 3). The two-tier system does a slightly better job of protecting households against 2024 prices than the three-tier, delivering wins for an additional 3% of the total population. Both systems deliver wins for over 94% of households in the bottom equivalised income decile.

Table 8: Proportion of households winning (the win rate) under different policy and subsidy scenarios, and against different reference periods

Spending envelope	Policy	Overall win rate versus 2021	Win rate among bottom decile 2021	Overall win rate versus Q1 2024	Win rate among bottom decile Q1 2024
£8bn	Two-tier	40%	67%	91%	96%
	Three-tier	59%	79%	88%	94%
£10bn	Two-tier	45%	71%	98%	99%
	Three-tier	62%	82%	94%	97%

Source: NEF and Friends of the Earth analysis of the LCFS survey

Figure 3: Proportion of households in each equivalised income decile winning from two policy approaches and two budget envelopes against a baseline of forecast 2024 energy bills



Source: NEF and Friends of the Earth analysis of the LCFS survey

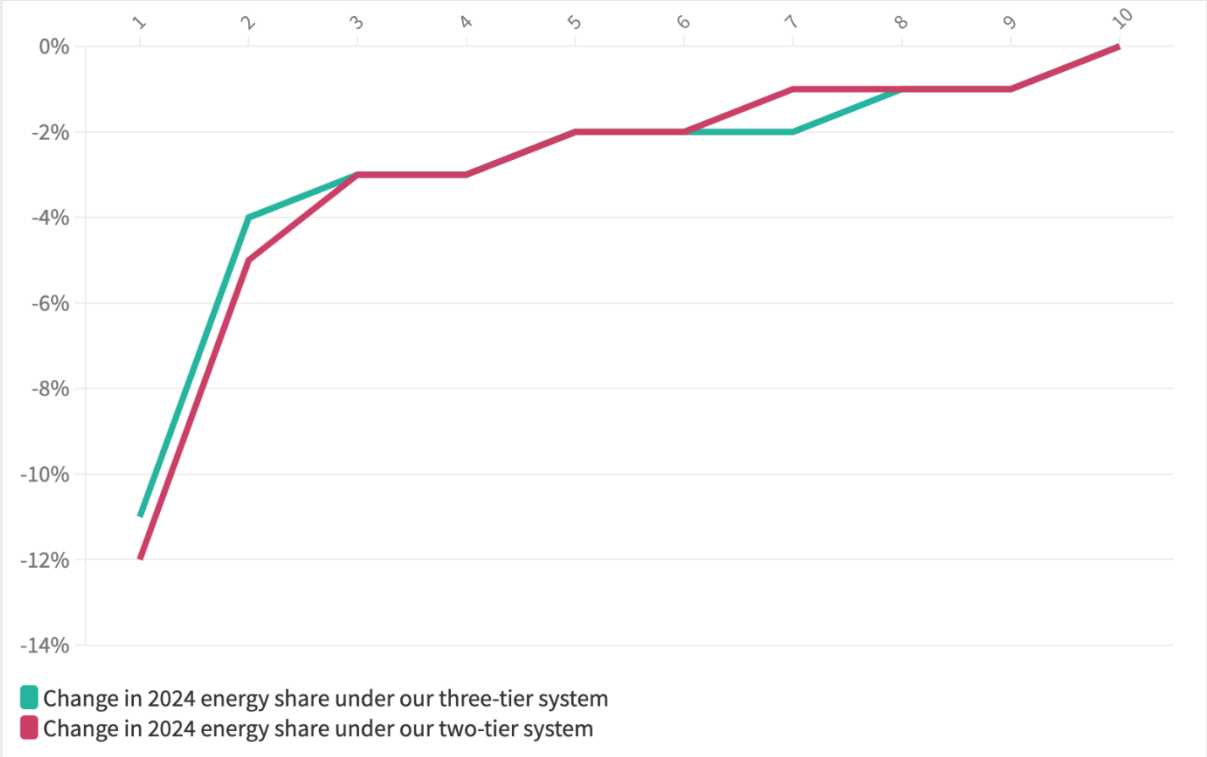
Our policies also deliver bill reductions for a large number of low-income households when compared to their pre-crisis (2021) baseline bill (Figure 4). The three-tier system performs slightly better in this regard, delivering wins for around 60% of households, compared to only 40% under the two-tier system.

Figure 4: Proportion of households in each equivalised income decile winning from two policy approaches and two budget envelopes against 2021 energy bills

Source: NEF and Friends of the Earth analysis of the LCFS survey

The net effect of our proposed policies is to significantly reduce the proportion of household income (after housing costs) spent on energy bills. For the bottom decile, the energy share almost halves from 24% to just over 12% of income (Figure 5 Figure 5). In addition, the gap between the proportion of household income spent on energy by the lowest- and highest-income households almost halves.

Figure 5: Change in the energy bill share of household income (after housing costs) by equivalised income decile in 2024 under two scenarios, assuming a £10bn additional annual government subsidy.



Source: NEF and Friends of the Earth analysis of the LCFS survey and IPPR tax-benefit model

Table 9 shows how a series of example cases, based on Ofgem's household archetypes, could be affected by these policies. It highlights that, while a minority of households will experience material increases in energy bills, these households are typically those with the broadest shoulders – those that are much more likely to be able to afford the increase, and/or to afford to invest in mitigation measures such as home energy efficiency improvements and solar panels.

Table 9: Example bill changes for each Ofgem household archetype, assuming a three-tier billing system and a budget envelope of £10bn.

Archetype		Number of households	Heating fuel	Average household income (BHC) (GB avg: £34k)	Elec kWh (GB avg: 3,980)	Gas kWh (GB avg: 13,180)	Main attributes (keywords)	Assumed eligible for benefits?	Assumed children?	Assumed disability?	Change vs 2021	Change vs Q1 2024
A	**A1**	2,761,000	Mains gas	£48,000	3,250	9,650	High incomes, owner-occupied, working-age families, full-time employment, low consumption, regular switchers.	No	Yes	No	-£383	-£946
	A2	2,916,000	Mains gas	£54,600	4,920	20,520	High incomes, owner-occupied, middle-aged adults, full-time employment, big houses, very high consumption, solar PV, environmental concerns.	No	No	No	£819	-£229
B	**B3**	3,674,000	Mains gas	£28,600	3,670	15,350	Average incomes, retired, owner-occupied - no mortgage, electric vehicles, environmental concerns, lapsed switchers, late adopters.	No	No	No	£115	-£667
	B4	2,323,000	Mains gas	£40,600	4,090	15,630	High incomes, owner-occupied, part-time employed, high consumers, flexible lifestyles, environmental concerns.	No	Yes	No	£59	-£765
C	**C5**	1,922,000	Mains gas	£15,200	2,570	11,270	Very low incomes, single female adult pensioners, non-switchers, prepayment meters, disconnected (no internet or smartphones).	Yes	No	No	-£329	-£891
D	**D6**	1,547,000	Mains gas	£18,100	3,920	12,340	Low income, disability, fuel debt, prepayment meter, disengaged, social housing, BME households, single parents.	Yes	Yes	Yes	-£568	-£1,271
D7		1,205,000	Mains gas	£34,000	4,140	15,600	Middle-aged to pensioners, full-time work or retired, disability benefits, above-average incomes, high consumers.	No	No	No	£278.1	-£549
E	**E8**	2,356,000	Mains gas	£23,400	3,620	11,950	Low income, younger households, part-time work or unemployed, private or social renters, disengaged non-switchers.	Yes	Yes	No	-£493	-£1,160
E9		3,093,000	Mains gas	£37,000	3,200	10,440	High income, young renters, full-time employment, private renters, early adopters, smartphones.	No	No	No	-£234	-£819
F	**F10**	1,912,000	Oil, Electric	£38,900	5,750	0	Middle-aged to pensioners, full-time work or retired, owner occupied, higher incomes, oil heating, rural, environmental awareness, RHI installers, late adopters.	No	No	No	£439	-£6
G	**G11**	1,510,000	Electric, Oil	£30,200	5,250	0	Younger couples/single adults, private renters, electric heating, employed, average incomes, early adopters, BME backgrounds, low engagement.	No	Yes	No	£143	-£262
H	**H12**	644,000	Electric, Oil	£14,500	4,030	0	Elderly, single adults, very low income, medium electricity consumers, never-switched, disconnected, fuel debt.	Yes	No	No	-£341	-£651
H13		526,000	Electric, Oil	£22,000	5,360	0	Off gas, low income, high electricity consumption, disability benefits, over-45s, low energy market engagement, late adopters.	Yes	No	No	-£201	-£615

Source: NEF and Friends of the Earth analysis of the LCFS survey and Ofgem household archetypes

9. CONCLUSION

The UK's energy billing framework requires an overhaul. A system is needed which recognises energy as an essential service, secures basic needs, cushions fluctuations, puts the right incentives in place to drive the transition to net zero greenhouse gas emissions, and distributes the costs fairly. Our proposed scheme – a national energy guarantee – can deliver such a system and deserves serious consideration in the upcoming debates surrounding the future of energy retail in the UK.

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