

Delivering a National Energy Guarantee

Policy briefing | Alex Chapman and Chaitanya Kumar | August 2023

The National Energy Guarantee

The National Energy Guarantee (NEG) is a proposal from the New Economics Foundation (NEF) to reform the UK's energy billing system.¹ The NEG involves a new energy billing structure which lowers and fixes the price paid by households on their essential energy needs. A higher price is then charged by retailers for higher levels of usage. The policy is accompanied by a simple set of allowances, which act in a similar way to a social tariff. These are aimed at households with specific vulnerabilities and/or additional energy needs, as well as households making the transition to all-electric energy consumption. The proposal builds on the popular Energy For All campaign coordinated by Fuel Poverty Action that gathered 652,000 signatures last year.²

Most analysts predict that the remainder of this decade will be marked by high energy bills, compared to 2021 levels, prolonging the pain for families across the country. On top of this, the government is considering levying further charges on energy bills that could pay for new hydrogen, nuclear, and carbon capture and storage infrastructure. These levies on electricity are already making the transition to heat pumps less attractive to consumers and sustaining the use of gas. Notwithstanding these new levies, without a change of approach, the fixed costs of the energy system, such as building and maintaining the national electricity grid, will further increase the burden on household bills.

But these outcomes are avoidable and consumers can be protected against both current elevated prices and future increases in their energy bills through system reform. The National Energy Guarantee is a direct response to these volatilities, offering a robust safety net that is universal, cost effective for consumers and government, and a net positive for the environment.

A triple-layer protection on the energy needs of the poorest households

The National Energy Guarantee (NEG) places a triple-layered safety net around the energy consumption of all UK households, ensuring that nobody is left with a choice between heating or eating:

¹ Chapman, A. and Kumar, C. (2023) The National Energy Guarantee. New Economics Foundation. URL: <https://neweconomics.org/2023/04/the-national-energy-guarantee>

² See Fuel Poverty Action: <https://www.fuelpovertyaction.org.uk/energyforall/>

1. NEF's preferred design of the NEG provides 50% of a household's annual essential energy needs for free. This means, in an emergency, a household could survive between three and nine months (depending on the time of year) with no income, and still meet their basic needs.
2. NEF's proposal includes three targeted allowances designed to provide further support to vulnerable households. We propose an additional allocation of essential energy, at free or reduced price, on a per-child basis, as well as to households with disabled residents. In addition, we propose an exemption from the premium price tariff for all households with residents in receipt of means-tested benefits.
3. Under the NEG, all households at risk of entering the premium price tariff would be provided with advance notice and time to upgrade their home's efficiency. A three-year rollout programme which dovetails the NEG with a national home retrofit programme, the Great Homes Upgrade, would ensure that the small remaining minority of low-income households at risk of paying the premium tariff would be contacted by a retrofit co-ordinator that would ensure their home was upgraded to an efficient, low-carbon standard with support from government home upgrade grant schemes (e.g. The Energy Company Obligation scheme).

A revolutionary incentive on residential decarbonisation

A key advantage of the NEG's design is that all households experience a major new incentive to de-carbonise their homes. Depending on the tariff threshold set, the financial return on measures such as home insulation and solar panels could increase by 30-50%, creating a significant stimulus on national demand and leading to a boom in green job creation.

Easier, cheaper, more sustainable, and more comprehensive

A range of different proposals have been made for supporting households facing fuel poverty. Most proposals take the form of a social tariff that targets support, either as cash or in government-subsidised energy prices, at specific less-well-off subsections of society. These proposals are often effective in principle, but challenging to implement, while some are easier to implement but less well-targeted. All, however, work within the current structure of energy pricing and billing, and attempt to plaster over its flaws.

Some emerging proposals for a social tariff use a fixed level of household income as an eligibility threshold for a reduced energy price. The principal issue presented by this approach is that absolute household income levels are a poor indicator of need. Household composition (age, children and disability), location (high or low rent areas) and building characteristics (low or high energy efficiency) also play an important role in determining relative wellbeing independent of income. For example, around 1.3 million dual-fuel households in receipt of means-tested benefits have a household income above £30,000 (which some have suggested

could be the cut-off level for providing targeted support).³ Some have proposed refining the targeting system with other data inputs, such as energy usage data, but the system quickly develops into a new means-testing problem which will present major implementation challenges and may still fail to provide support to many vulnerable groups.

Table 1 below highlights some of the key differences between our proposed structural reform, via the National Energy Guarantee, and application of a traditional social tariff under the current system.

Table 1: The merits of structural reform via a NEG combined with modest social tariffs versus implementation of wide-reaching social tariffs within the current system

Domain	Structural reform (NEG)	Social tariff without structural reform
Cost to government/level of support	Delivers more support at a lower cost to government thanks to the cross-subsidisation it creates from wealthier high-usage consumers to poorer and/or low-usage consumers. Outside of crisis periods, the reform can be implemented at no additional cost to government. During crises, government expenditure can be more efficiently targeted to need by taking action focused at higher usage tariffs, and can be ramped up and down as-and-when needed.	Costs can be high due to the scale of support needed, and lack of cross-subsidisation. ⁴ There is significant risk of deadweight as, due to targeting challenges, support will likely be provided to households that are not facing fuel poverty. Schemes can be designed with lower cost burden but these would effectively replicate existing schemes such as the warm home discount or winter fuel payments, and likely reproduce their failings.
Administration	Involves a change in the billing structure, but has already been successfully implemented in multiple countries and regions. The proliferation of smart meters will also help to simplify administration.	Effective targeting to avoid cliff edges or households missing out would typically involve the development of a new means testing system, presenting a wider array of data co-ordination, fairness, and privacy challenges.
Targeting	Targets support at essential need and provides a safety net for all. Contains an in-built targeting system via the premium tariff for supporting those with additional energy needs and for identifying energy-inefficient homes.	Support is not universal, and targeting is imperfect, therefore creating a potentially large group of vulnerable households that do not receive support.
Competition	Protects everybody by providing certainty for the essential energy usage while leaving open the space for competition and innovation on higher usage tariffs, including the provision of products such as energy-as-a-service.	If social tariffs are covered by the tax payer, it effectively eliminates the burden on suppliers to service a significant population. If energy bill payers cover the cost of a social tariff, it would represent an extension of the status quo.
Environmental impact	Large new incentives for decarbonisation are created leading to significant and rapid emissions reduction.	Impacts are either neutral or negative as there are no built-in incentives to decarbonise.

³ Norman, A., Corfe, S., Kirkup, J., Powell-Chandler, D. (2023) Fairer, warmer cheaper: New energy bill support policies to support British households in an age of high prices. Social Market Foundation. URL: <https://www.smf.co.uk/publications/fairer-warmer-cheaper/>

⁴ See for example: Age UK (2023) Keeping the lights on: The case for an energy social tariff. Age UK. URL: <https://www.ageuk.org.uk/our-impact/policy-research/publications/reports-and-briefings/>

No system is perfect, and all billing structures, including NEF's NEG could operate well alongside a social tariff (traditionally defined) to protect specific vulnerable groups. This could have the added benefit of enhancing the quantum of support such groups could receive, on top of the NEG. However, solely relying on a social tariff, without system reform, amounts to another sticking plaster and is not a sustainable, long-term solution. Under the current energy billing system, the size and variety of groups exposed to fuel poverty and fuel stress is very significant, hence requiring a very large sticking plaster. Analysis by Social Market Foundation for Citizens Advice identified a group of 8-12 million households (29-44% of all households) that would be targeted by the different social tariff models they explore.⁵ Trying to develop a social tariff which operates on such a broad scale presents many challenges as discussed in the table above.

Rolling out a National Energy Guarantee with a target of 'no low-income losers'

Under normal market conditions, and supported by a simple set of allowances for households with specific additional energy needs, around 80% of all UK households would be winners from the NEG, rising above 90% among the poorest communities. Depending on the prevailing market conditions and the design of the policy, the poorest households would see bill reductions in the order of £350 under pre-crisis conditions, at a cost comparable with pre-crisis spending on energy bill support. From their perspective, as fast a rollout as possible of the NEG would be advantageous.

As the National Energy Guarantee entails levying a higher, premium energy price on higher levels of usage, potentially around 20% of households could see a net rise in their energy bills. The shape of UK energy consumption, and the introduction of targeted allowances supporting residents with disabilities, children, or in receipt of benefits, means the large majority of households seeing a rise in bills from the policy are among the wealthiest in UK society. There will also be concerns for a very small minority of households (around 2%) that have low income but high energy usage, and do not gain eligibility for any of our proposed allowances. This group face a potentially challenging energy bill increase resulting from the premium tariff.

This category is likely to include households with low income but high enough savings so as not to be eligible for Universal Credit, as well as households with no recourse to public funds, and larger households, such as those in multiple occupancy (HMOs). To support this group we consider a tapered roll-out of the scheme, as shown in the table below, beginning from a no-lose position. This will initially see the scheme rolled out as a two-tier system with modest reduction in tariffs (5%) on the lower tier and no increase in the upper tier for year zero. By year 3, the premium band would see a steep rise in unit rates of 40% and the lower band will fall by 50%. By year 4, a three-tier system could be introduced with a free band, a market-priced band and a premium band at 50% higher than the market price. At each stage, we identify the number of households in the bottom 30% of incomes that could be net losers from the scheme.

⁵ Norman, A., Corfe, S., Kirkup, J., Powell-Chandler, D. (2023) Fairer, warmer cheaper: New energy bill support policies to support British households in an age of high prices. Social Market Foundation. URL: <https://www.smf.co.uk/publications/fairer-warmer-cheaper/>

This estimate represents a worst-case scenario as many households will be able to reduce their energy consumption without negatively impacting their wellbeing (as seen in other localities in which a block tariff model has been rolled out).

A rapid and targeted mobilisation of retrofit co-ordinators, supported by a comprehensive set of government grants for energy efficiency measures, would then support those households potentially caught in this minority to upgrade their homes and reduce their energy needs.

Table 2: Number of households needing a retrofit and the cost of the NEG

Year	Free band	Lower band	Upper band	Loser rate among bottom 30% of households by equivalised income	Households retrofit (cumulative)	Cost
0	N/A	-5%	0%	-	-	-£580,308,456
1	N/A	-15%	5%	1.0%	66,667	-£1,369,577,611
2	N/A	-25%	15%	6.0%	393,824	-£1,787,499,006
3	N/A	-50%	40%	9.9%	654,499	-£2,832,302,494
4	Yes	0%	50%	10.4%	687,980	-£2,804,683,489

Notes: As the scheme is rolled out over a period of time and the premium tariff gets stronger, the cumulative households needing retrofit will increase. However, this also provides an opportunity to tackle those properties by local authorities and energy suppliers. Costs have broadly been held around the current levels of support offered via schemes such as the warm homes discount, winter fuel payments etc. Tariff thresholds have been provided below.

By mapping postcode level energy use data against the energy efficiency of the housing stock, we can more easily identify the properties in need of retrofitting. This can then be cross-compared with social deprivation data to identify particularly vulnerable households. Our analysis shows that a significant majority of the areas of concern in urgent need of retrofitting can be found within just eleven localities: Birmingham, Blackburn, Blackpool, Bradford, Burnley, Derby, Halifax, Leeds, Middlesbrough, Oldham and Walsall. The identification process for these households is illustrated in Figure 2 which shows how energy usage can vary between localities even among households with similar deprivation characteristics.

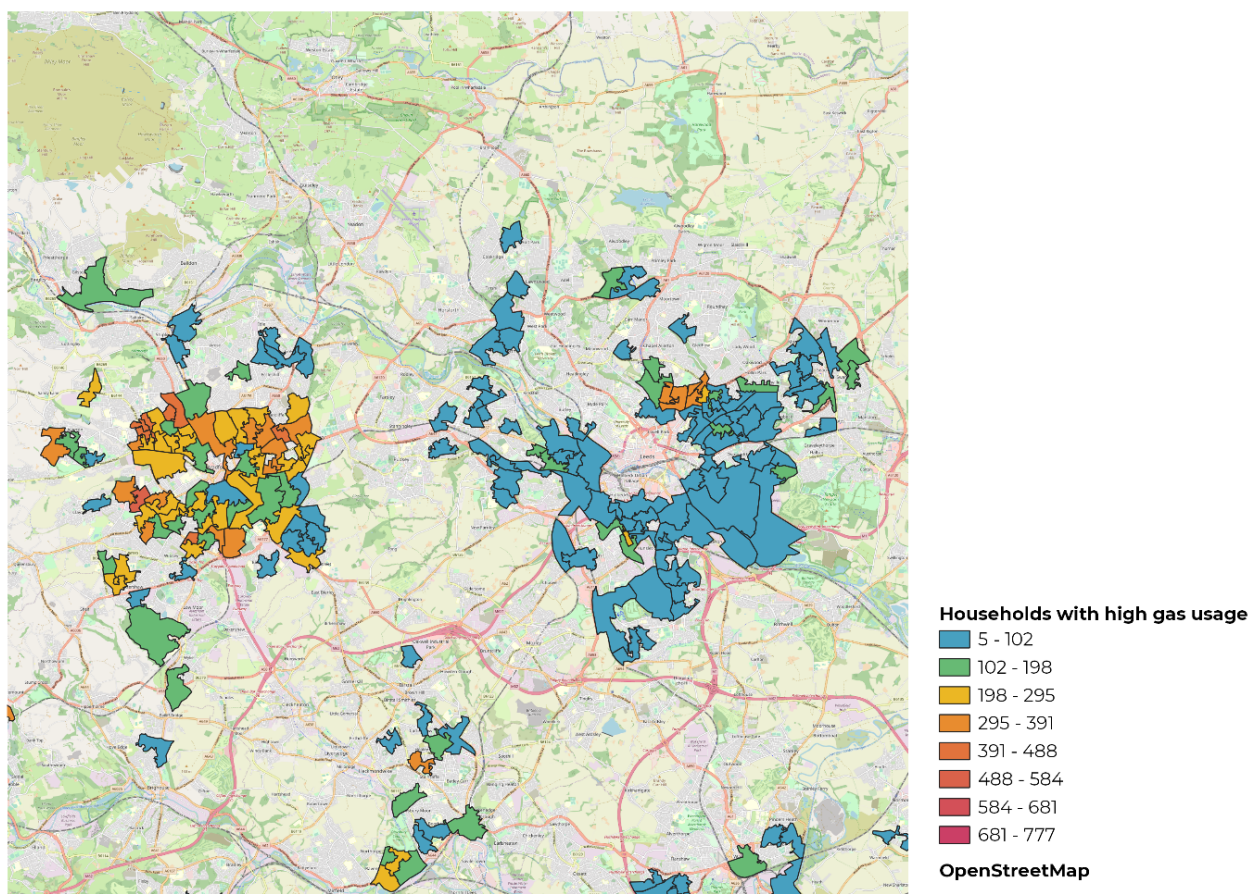
Figure 2 also highlights that target households are often relatively concentrated, giving great potential for a street-by-street retrofit approach. Bradford is identified as a particular hotspot of combined deprivation and high energy use. Multiple factors likely drive this, but two key issues include the poor energy efficiency of housing stock, with Bradford ranked 23rd worst out of 332 in England and Wales in terms of EPC rating, and the overcrowding of homes.⁶

Retrofitting measures needed are likely to be deeper than basic insulation but as highlighted in Table 2, they are well within the peaks of what the UK has achieved within a single year (e.g. almost a million homes improved in 2012). Considering the significant challenges with the ECO

⁶ See: Lloyd, C. (2020) Bradford Housing Space Profile. Queen's University Belfast.

scheme today, with retrofitting measures falling off a cliff, we believe this approach is better suited to target scarce energy efficiency funding whilst tackling fuel poverty.

Figure 2: Neighbourhoods (LSOAs) in the top ten percent by social deprivation (index of multiple deprivation) are shown, and colour coded by the number of high energy-using households found within the neighbourhood.



Source: Department for Energy Security and Net Zero, postcode level domestic gas and electricity consumption

Examples from other countries

The National Energy Guarantee is based on the principle of the rising block tariff, also referred to as increasing or inclined block tariffs. Such tariffs have been implemented across different jurisdictions around the world. One of the most notable is its application in the state of California, in different guises, over the last two decades. A 2019 study, using energy usage data from public utilities, found that the increasing block tariff model helped reduce overall energy consumption and lower energy bills for low-income households, compared to a flat price structure.⁷ The economic principle underpinning this effect is that consumers respond to the 'marginal price' (the cost of providing an additional unit of energy) and depending on how the

⁷ Brolinson, B. (2019) Does increasing block pricing decrease energy use? Evidence from the residential electricity market. Georgetown University

thresholds are structured and the charges associated with premium tier tariffs, consumers will respond with a reduction in their energy consumption.

The tariff structure has seen several iterations and faced some criticism as it leads to high electricity bills for some customers in the highest tiers, particularly during periods of high demand like heatwaves. In response, the California Public Utilities Commission (CPUC) initiated several reforms over the years, such as reducing the number of tiers and implementing a “super-user electric surcharge” for extremely high usage. The most recent effort by electric utilities in California is to propose a more progressive distribution of the fixed costs of running the electricity grid, tying it to household income. Though we do not discuss fixed costs in any detail in our proposal, considering the fact that these costs are set to increase considerably in the coming years, the UK government should consider a similar proposal, possibly using general taxation or other progressive instruments to redistribute fixed energy costs.

Beyond California, block tariffs have been used in China, India, South Africa, Dubai and several other places, often applied to both water and energy. Another study in China found that an approximate 40% increase in marginal price induced an approximate 35% fall in electricity use.⁸ Utilities are increasingly considering this approach globally and the notion of providing a basic energy entitlement has considerable attraction.

Going beyond incrementalist approaches

The NEG will facilitate the low carbon transition in power, heating and transport that is critical to meeting our net zero targets. The table below summarises how the scheme offers a step change against the current regime. Incremental approaches, constrained by inertia, will achieve very little in creating a more permanent and resilient system that protects all households against future price shocks.

Table 3: Summary of how the NEG offers a step change from the current system

Issues and target groups	Status quo	Change via the NEG
Energy use	A mix of confusing tariffs, fixed and variable, ⁹ often leaves the consumer not in control and highly exposed to the whims of the market.	All customers will benefit from the first free or subsidised block of energy. With a block of energy at a fixed price, certainty and control is restored to the customer.
Low-income, low-energy users	This group pays the same standing charge as high users and will in the future be penalised even more by high users who avoid the true fixed costs of their usage of the system.	This group will be fully protected by the first universal subsidised block providing them with certainty and control, and rewarding them for their efficient consumption.

⁸ Zhang, Z., Cai, W., Feng, X. (2017) How do urban households in China respond to increasing block pricing in electricity? Evidence from fuzzy regression discontinuity approach. *Energy Policy*, 105: 161-172.

⁹ See: <https://www.independent.co.uk/news/uk/home-news/energy-bill-consumer-confusion-survey-b2353613.html>

Low-income, high-energy users	This group is exposed to volatility and a lack of control due to turbulent market price movements and the vagaries of targeted support schemes that create cliff edges while often providing inadequate support.	Key vulnerable groups will have their additional energy needs protected through an additional allowance of subsidised energy. Those receiving means-tested support from the benefits system will be exempted from entering the premium tariff band. Bad housing will be flagged and concerted energy efficiency interventions can be implemented street by street.
Average energy users	This group manages the volatility and experiences lack of control with limited options or financing for investing in decarbonisation or energy efficiency.	Almost all households at the national median energy consumption levels will see a reduction in their energy bills, and all households gain a new safety net protecting their essential usage. They can also access decarbonisation and energy efficiency support, potentially through long term service agreements, encouraged by the NEG's major new financial incentive.
High-energy users	This group do not pay for their fully loaded cost to the system and are currently being subsidised by low energy consumers. Going forward this will become even more stark with network investments and significant whole system costs associated with high-energy consumers and the rise of products like electric vehicles.	This group's higher costs to the system will be reflected in the highest block tariffs. In other countries, rising block tariffs have resulted in high-energy consumers investing significantly in energy efficiency measures and self-generation reducing whole system costs for everyone. California is one such examples where tiered tariff structure contributed significantly to the growth of domestic solar.
Energy efficiency measures	The current incentives to invest in energy efficiency are weak and compounded by a volatile unit price and there are limited options to get finance to adopt these measures.	Reducing your consumption to a lower energy block will become both an incentive for the home owner but would also offer retailers new propositions with finance and services.
Heat pump deployment	Only high-income households can typically afford to deploy heat pumps. In addition there are limited services that unlock both the finance or the servicing of heat pumps. As a result we also lack the flexibility assets required for the decarbonised system.	Households will be able to draw across additional electricity usage allowance from any under-utilised gas allowance. Through energy services, long-term finance packages and with the block tariff as a core incentive to reduce consumption through lower level heating equipment, uptake with the energy efficiency measures needed will be much more widely available and desirable.

Notes on the model

Minor improvements to the model design, as well as small tweaks to the tariffs thresholds, have been made since our last report on the NEG, meaning that the numbers shown in Table 2 differ slightly from those previously presented.¹⁰ These changes have no material impact on the key household winner/loser rates. Table 2 describes the functioning of the NEG under pre-crisis conditions (i.e. 2021 average energy prices), with thresholds set as shown below:

- Two-tier designs: discounted rates applied up to 2,100 kWh of electricity and 5,400 kWh of gas. Premium tariffs applied to all consumption at higher levels.
- Three-tier design: free energy provided on the first 1,050 kWh of electricity and 2,700 kWh of gas, 2021 average prices applied to the next 1,050 kWh of electricity and 5,300 kWh of gas. Premium tariffs applied to all consumption at higher levels.

New Economics Foundation
www.neweconomics.org
info@neweconomics.org
+44 (0)20 7820 6300

NEF is a charitable think tank. We are wholly independent of political parties and committed to being transparent about how we are funded.

Registered charity number 1055254
© 2023 The New Economics Foundation

¹⁰ Chapman, A. and Kumar, C. (2023) The National Energy Guarantee. New Economics Foundation.
URL: <https://neweconomics.org/2023/04/the-national-energy-guarantee>