

Energy Security and Net Zero Committee Inquiry: Preparing for the Winter

Written evidence submitted by UCL Institute for Sustainable Resources

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The UCL Institute for Sustainable Resources' mission is to provide evidence, expertise and training to respond to climate change and support sustainable transitions for people and planet. This response is written by several of our researchers, based on work as part of UCL's programme on electricity market design.

We welcome the opportunity to submit evidence to this important inquiry. We would be delighted to discuss this response, or any of our other work. Please contact Katherine.page@ucl.ac.uk

What more could have been done to prevent price shocks being passed to consumer bills?

During the winter of 2022/23, amid astronomical energy prices and a broader cost of living crisis, numerous support mechanisms were implemented in addition to pre-existing schemes to help households:

- Universal support schemes included the Energy Bill Support Scheme (EBSS) and Energy Price Guarantee (EPG)
- Targeted schemes provided supplementary non-energy specific support to more vulnerable households. These included the Cost-of-Living Payment, Pensioner Cost of Living Payment and Disability Cost of Living Payment.

The EPG is considered a particularly impactful and successful scheme in terms of broad consumer protection, (Miller et al., 2023), limiting the average household energy bill to £2,500 (and limiting impact on inflation compared to payment schemes), albeit at high cost to the Treasury and some perverse incentives on generators. Without the scheme, bills could have surged as high as the default Ofgem tariff cap of £4,279 in January 2023 (Norton, 2023).

Despite these efforts, fuel poverty rates in the UK have soared. Since October 2021, 2.1 million additional households spend over 10% of income to heat their homes to a satisfactory level, bring the total number of fuel poor households to 6.6 million (NEA, 2023).

We consider that priority should have been given to shielding the most vulnerable consumers from price shocks. A well targeted social tariff, mandated across all energy suppliers, could have been implemented as a more reliable method of limiting the impact of price shocks on the most vulnerable consumers. A social tariff should be considered for implementation before the removal of the EPG in March 2024 (DESNZ, 2023), to limit further expansion of fuel poverty in the UK. Numerous organisations and charities including National Energy Action, Age UK, Scope, Fair by Design, and Energy Action Scotland also advocate for the implementation of a social tariff (NEA et al., 2023).

Consumers supported by a social tariff should include those already captured by the welfare system – those on means tested benefits, disability benefits and receiving carers allowances – as well as households *outside* the welfare system who consistently struggle to pay energy bills (Leigh, 2023). To accurately identify the most vulnerable consumers to support using a social tariff, HMRC / Department for Work and Pensions data on household income could be shared with energy suppliers holding consumption and payment data (NEA and Fair By Design, 2022).

A social tariff would significantly reduce the energy bills of all eligible households, bringing costs below the default Ofgem tariff cap. Whilst various social tariff mechanisms have been evaluated, two of the most commonly suggested include a cash or voucher payment scheme (Citizens Advice, 2023; Norman *et al.*, 2023) and an energy tariff discount (Karania, 2022; Age UK, 2023a, 2023b).

Given evidence that schemes using vouchers and cash payments often result in significant unclaimed support, particularly disadvantaging those on prepayment meters (Miller *et al.*, 2023), we recommend the latter – direct discounts on energy tariffs. The social tariff should be automatically applied, providing a substantially discounted standing charge and unit rate to vulnerable consumers.

There are three potential approaches to funding this. Two involve direct funding. Supplier costs exceeding the social tariff could be compensated for by increasing the bill for less vulnerable consumers, or could alternatively be covered by via general taxation (NEA and Fair By Design, 2022). Raising prices for less vulnerable households risks creating a steeper cliff-edge for those almost eligible for the social tariff, but that fall just outside. Funding a social tariff via general taxation provides a more equitable redistribution of the costs.

The third option (possibly longer term) could arise through decoupling the cost of gas derived electricity (with its cost inevitably tied to the volatile price of gas) from the rapidly growing share of renewably derived electricity. This decoupling is fundamental to delivering a functioning energy market and is therefore explained below. It could open the possibility of a social tariff which directly reflects the cost of renewable energy, or a subset of the UK's renewable electricity, particularly given the falling costs and rapid expansion of renewables under way.

How effective is the Government's approach towards supporting the sector and delivering a functioning energy market?

To help mitigate the climate crisis, the UK has committed to reducing its carbon dioxide emissions by 78% relative to 1990 levels by 2035, to ultimately reach net zero emissions by 2050. Therefore, there is a need to rapidly decarbonise electricity generation while ensuring energy remains affordable for UK households.

Since privatisation in the late 1980s, the electricity wholesale market has functioned on a marginal cost basis, in which electricity prices are set using the marginal cost of bringing online the last and most expensive power plant required to meet energy demand (Tam and Walker, 2023). At the time, fossil-fuel-derived electricity dominated the market. Since then, we have developed low carbon renewably derived electricity, which is more capital-intensive but has a much lower, near-zero 'short-run marginal cost' of operation. Therefore, the electricity wholesale price is primarily set by gas power plants which are significantly more expensive to operate.

Our research has identified that in 2021, despite only accounting for 40% of total generation, gas set the price of electricity 98% of the time (Zakeri *et al.*, 2022). The recent energy crisis saw the wholesale price of gas almost quadruple between early 2021 and January 2022, resulting in skyrocketing electricity costs, irrespective of the source (Office for National Statistics (ONS), 2023).

During 2022, the total bill incurred by UK electricity consumers increased by £29bn (Maximov *et al.*, 2023) and throughout winter 2022/23, the energy expenditure of a typical household more than doubled relative to the ten year average pre-crisis (McNally *et al.*, 2023). This surge in bills plunged millions into fuel poverty, despite renewable electricity accounting for 40% of total generation (Kyriacou, 2023) – the price of electricity is increasingly inflated by its dependence on whole-system marginal-pricing. The current market – originally designed ensure the lowest cost of electricity for consumers drawing on fossil fuel-based generation – no longer delivers in an era of rapid renewables deployment, as has been highlighted during this energy crisis.

An energy market appropriate to a renewables-intensive future should ensure that consumers get the benefit of rising renewable energy and the fall in renewables costs that has been observed. This will require government to decouple the highly volatile price of gas from the growing share of reliably priced renewably derived electricity.

Decoupling could be achieved through a split market structure, such as the Green Power Pool proposed by the electricity markets team at UCL (Grubb, Drummond and Maximov, 2022). The pool would be supplied solely by renewable generators, for example those on contracts for difference, operating in tandem with the current wholesale market. During times of over-supply, the pool could sell its surplus to the wholesale market, and conversely in times of under-supply the pool could buy electricity back. Initially, on the demand-side, electricity from the pool could be targeted to provide cheaper energy for vulnerable households who are most severely affected by price volatility. A targeted pool could organically reduce the costs associated with social support schemes such as a social tariff. As the capacity of the pool expands, access to the pool could too.

As the volume expands, such a structure could also provide consumers with more real choice. In 2021, 9 million British households (roughly one third) chose green tariffs (BEIS and The Rt Hon Anne-Marie Trevelyan MP, 2021), indicating a healthy appetite for clean electricity – but many of them still ended up paying the price of gas-powered electricity, sometimes with a green surcharge. Further, exposing the public to the lower cost of renewable electricity could create even greater ‘market pull’ through increased demand for the low carbon fuel. The pool could provide a more stable environment for increased investment in renewables, facilitating deep decarbonisation.

For more information on the Green Power Pool, please see the [Navigating the energy-climate crisis working paper series](#), in particular Working Paper 3 on the fundamental economics of the current system, and Working Paper 4 on the workings of the Green Power Pool proposal itself.

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