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The Price of Power: Wholesale Market Price Formation, Policy Costs and Domestic Electricity Bills in Britain

UKERC Discussion Paper

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Whole Systems Mission on Energy Bills

This is the first output from UKERC's Whole Systems Mission on energy bills, which examines options to reduce energy costs while enabling a fair, flexible and secure transition to net zero. In the coming months, UKERC analysis will identify a suite of possible options to reduce bills, looking across the system – from generation and transmission to end use – for both residential and industrial consumers.

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1. Introduction

Three years after Russia's invasion of Ukraine led to the gas and electricity price crisis, residential electricity bills in the UK[1] remain substantially above pre-crisis levels. The UK ranks 3rd for the most expensive residential electricity prices out of 28 IEA countries (DESNZ, 2025). These high prices drive inflation, disincentivise the electrification of heating and transport, and help fuel the cost-of-living crisis.

To understand the options for reducing residential electricity bills, we need to understand the primary drivers of costs, and where these drivers are heading as the system changes. Whilst there are a range of factors contributing to high prices, wholesale market price increases are responsible for the largest component of the real-terms increase in electricity bills since 2021.

However, the electricity generation mix in Britain is going through profound change. As the share of output with a fixed price contract (or CfD) rises, the role of gas generation in setting household prices will fall. This paper explores the relative impact of a range of drivers of price increases. It provides novel analysis of how the volume of generation affected by gas prices will reduce in future, and how bringing legacy renewable generation under a CfD could reduce policy costs and help reduce bills.

2. Unpacking the Stack: What's in an Electricity Bill?

The size of a residential consumer's electricity bill is driven by a range of factors, from their consumption habits and choice of heating technology to the size and efficiency of their home. All of this affects the amount of electricity we use. Most consumers also pay a standing charge to help cover fixed system costs.

Since 2019, the UK's energy regulator, Ofgem, has operated a price cap mechanism, which sets a maximum standing charge and unit rate per kWh. This cap is updated on a quarterly basis and, per Ofgem's updates, largely tends to fluctuate in line with changes to wholesale energy prices. The current daily standing charge for electricity is 53.68 pence per day, and the unit rate is 26.35 pence per kWh (Ofgem, 2025).

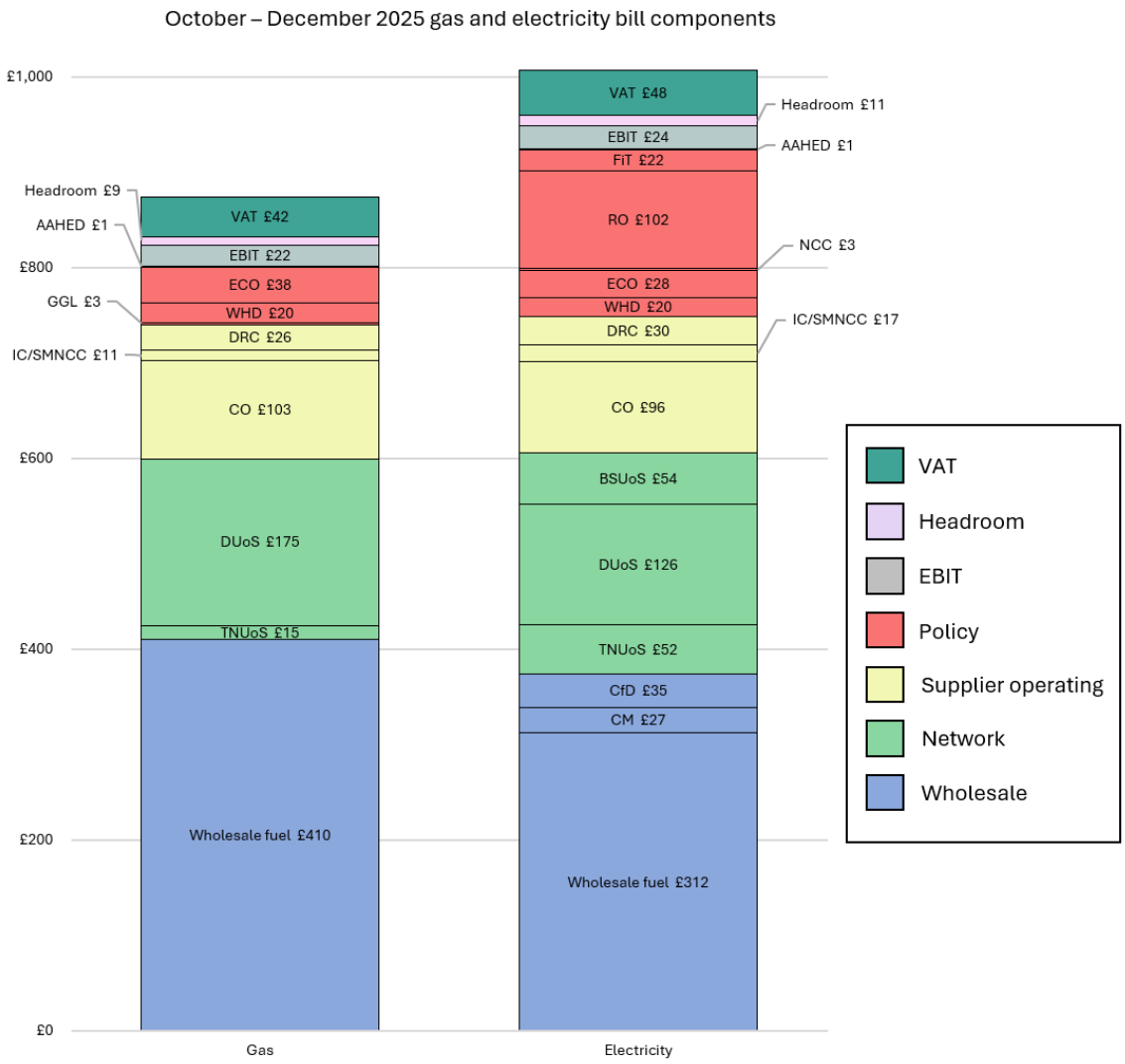
Figure 1 presents a granular breakdown of costs included in Ofgem's price cap methodology, which determines the default tariff[2] charged by suppliers, with the gas

[1] This paper focuses on Great Britain's electricity market, which is distinct from Northern Ireland's, since arrangements in the island of Ireland reflect the integrated electricity network therein. The political and policy context is treated on a UK-wide basis. The paper is therefore largely written from a UK-wide perspective, whilst noting that most of the data and impacts pertain to the GB market alone.

[2] Note that the default tariff is variable by payment type (direct debit, standard credit or prepayment meter) and that price cap rates do not apply to households on fixed rate energy deals.

bill included as a point of comparison. In Ofgem's methodology, these defaults have regional variation - the figures below represent a simple average across all regions. The electricity bill amounts to £1008, while the gas stack amounts to £875.

***Figure 1**: Ofgem 2025 October-December price cap for dual fuel household*[3]



Source: [Ofgem energy cap levels: pre-levilised rates model]

Electricity and gas bills are not identical, but are broadly comprised of the same components: wholesale energy costs, network costs, policy costs and supplier operating costs. Just under half of an average dual-fuel energy bill arises from the wholesale fuel costs. The remainder comes from a mix of policy, network and commercial costs, as we now explain:

- Wholesale costs amount to £374, or 39% of the total electricity bill, making it the most expensive component. They include wholesale fuel costs, Contracts for Difference (CfD) costs and Capacity Market (CM) costs.

[3] For definitions of acronyms see annex 1, glossary of terms.

- Network costs amount to £232 or 24% of the total electricity bill. They cover the cost of maintaining and operating the network, including costs to cover transmission (TNUoS), distribution (DUoS) and balancing (BSUoS) of electricity. Balancing costs were previously shared across consumers and generators. However, since 2023, these costs have solely been recovered through consumer electricity bills (Ofgem, 2023).
- Policy costs amount to £176 or 18% of the total electricity bill. They cover legacy renewable schemes such as Renewables Obligations (RO) and Feed-in-Tariffs (FiT), energy efficiency schemes such as the Energy Companies Obligation (ECO) and social schemes such as the Warm Homes Discount (WHD). At £102 per year for a typical consumer, the RO is the most costly of the policies, although the combined cost of ECO and WHD across both gas and electricity is broadly similar at just under £100.
- Supplier operating costs amount to £143 or 15% of the total electricity bill. This component includes payments towards core operating costs (e.g. administrative costs of social and environmental obligations, billing and payments, metering), consumer debt-related costs and industry costs.
- Other costs include 5% VAT, Earnings Before Interest and Tax (EBIT) allowance and Headroom allowance, which captures the residual net uncertainty across the cap methodology.

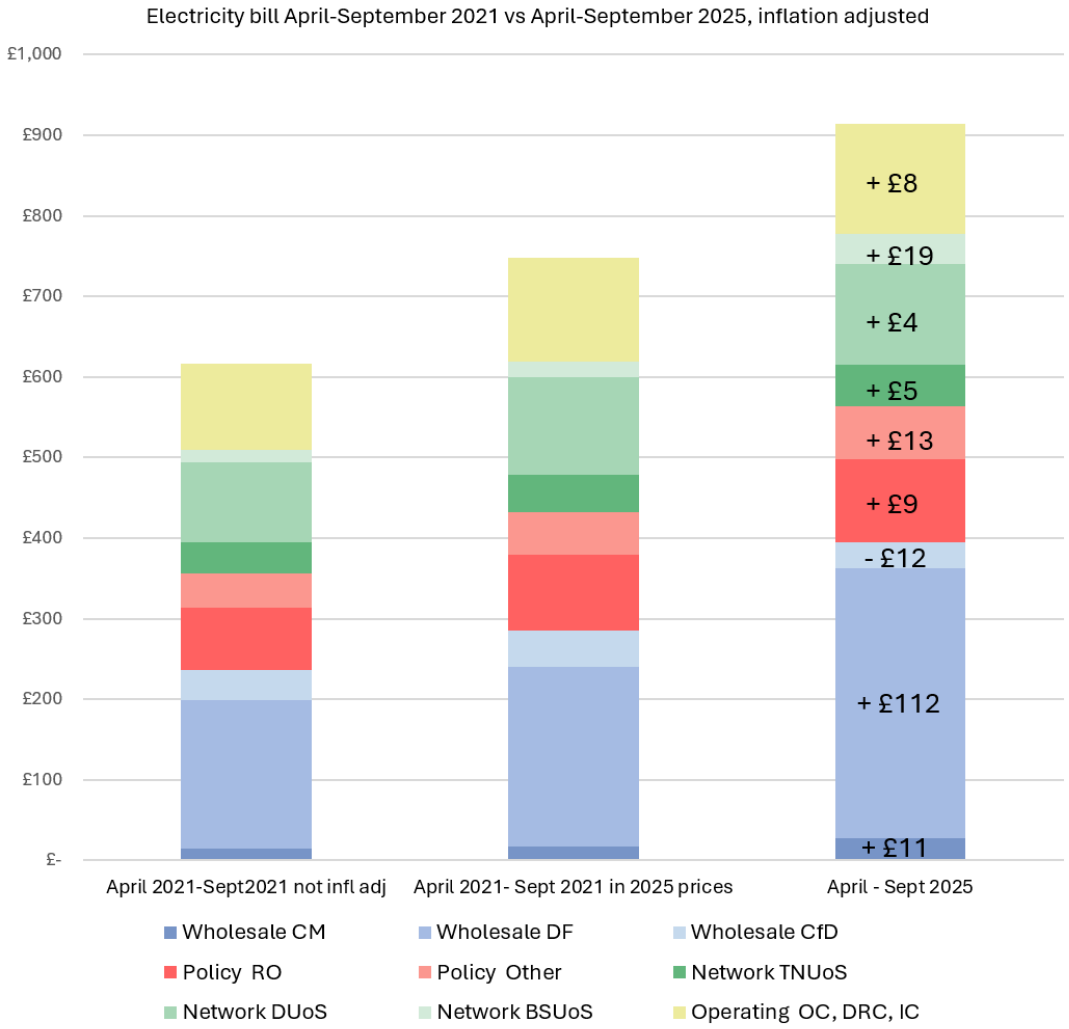
3. Why are Residential Electricity Prices in 2025 Still High?

To understand how electricity bills have changed compared to before the energy crisis, we set an inflation-adjusted electricity bill stack from 2021 against the 2025 stack. Adjusting for inflation is important, since it indicates that the total increase in real terms is around £150, and not the approximately £300 increase that a comparison of nominal prices would suggest.

Nevertheless, bills have gone up significantly in real terms, and there are multiple drivers for this. Figure 2 below shows that the single largest driver of the increase continues to be wholesale fuel prices. This component of household bills has gone up by £112 compared to 2021, accounting for 66% of the overall increase in electricity prices.

No other individual component accounts for anything like such a significant share of the increase in household prices. The two main additional categories of cost drivers are network costs and policy costs. These costs increased by £28 (17%) and £22 (13%) respectively.

***Figure 2**: Inflation-adjusted electricity bill from 2021 vs 2025*



Source: [Ofgem energy cap levels: pre-levilised rates model]

How have non-wholesale components changed?

- Network costs: Replacement and upgrading of transmission and distribution networks combined amount to around £9 on bills. A £19 increase arises from increased balancing costs (BSUoS) as the share of variable renewables increases. These reflect in part the presence of constraints due to the delayed build of transmission capacity needed to connect new wind farms.
- Policy costs: As the volume of generation with a CfD set by auction rises, CfDs have helped to reduce overall fuel costs, by around £12 per household. However, the RO has increased bills by £9 per household and other policies by around £12. As we note above, the RO is already the largest individual policy cost and as we discuss below, UKERC has argued that it should be replaced by a 'pot zero' CfD, which could largely eliminate the cost of the RO. Government could also remove policy costs from household bills and recover them through general taxation (Citizens Advice, 2023; Aldersgate Group, 2023; Cornwall Insight & The MCS Foundation, 2024).

- Supplier costs: While core operating costs have fallen slightly (by £3) since 2021, debt-related costs have doubled, adding £11 to the bill. This reflects the overall rise in consumer energy debt, which increased from £1.8 billion in 2021 to £3.7 billion in 2024 (Committee of Public Accounts, 2025).

Future work within UKERC will review options for reducing electricity prices from end-to-end, from generation through transmission and distribution to supplier and policy costs. In the remainder of this paper, we focus on the interactions between wholesale gas prices, the rising share of renewable energy with a CfD, and options for legacy RO generators.

4. Wholesale Price Drivers from Now to 2028

Increases in the direct fuel cost component of wholesale electricity prices from £51/MWh to £89/MWh[4] in today's prices, driven by a real terms doubling of gas prices since 2021, have been a major driver of the increase in consumer bills. Pressure on consumer bills from high gas prices is expected to ease slightly over the next few years as changes to the generation mix towards renewables with fixed-price contract structures start to reduce dependency on gas, reducing the average consumer bills by around £20/year by 2028.

Figure 3a and 3b illustrates how gas prices feed through to overall electricity pricing, and how this is expected to change in the next few years. Generators that sell their output on the basis of gas-driven market prices are indicated by the orange bars, whilst generators with fixed price contracts or other types of fixed revenues are shown in green. Some plant receives a mixture of both.

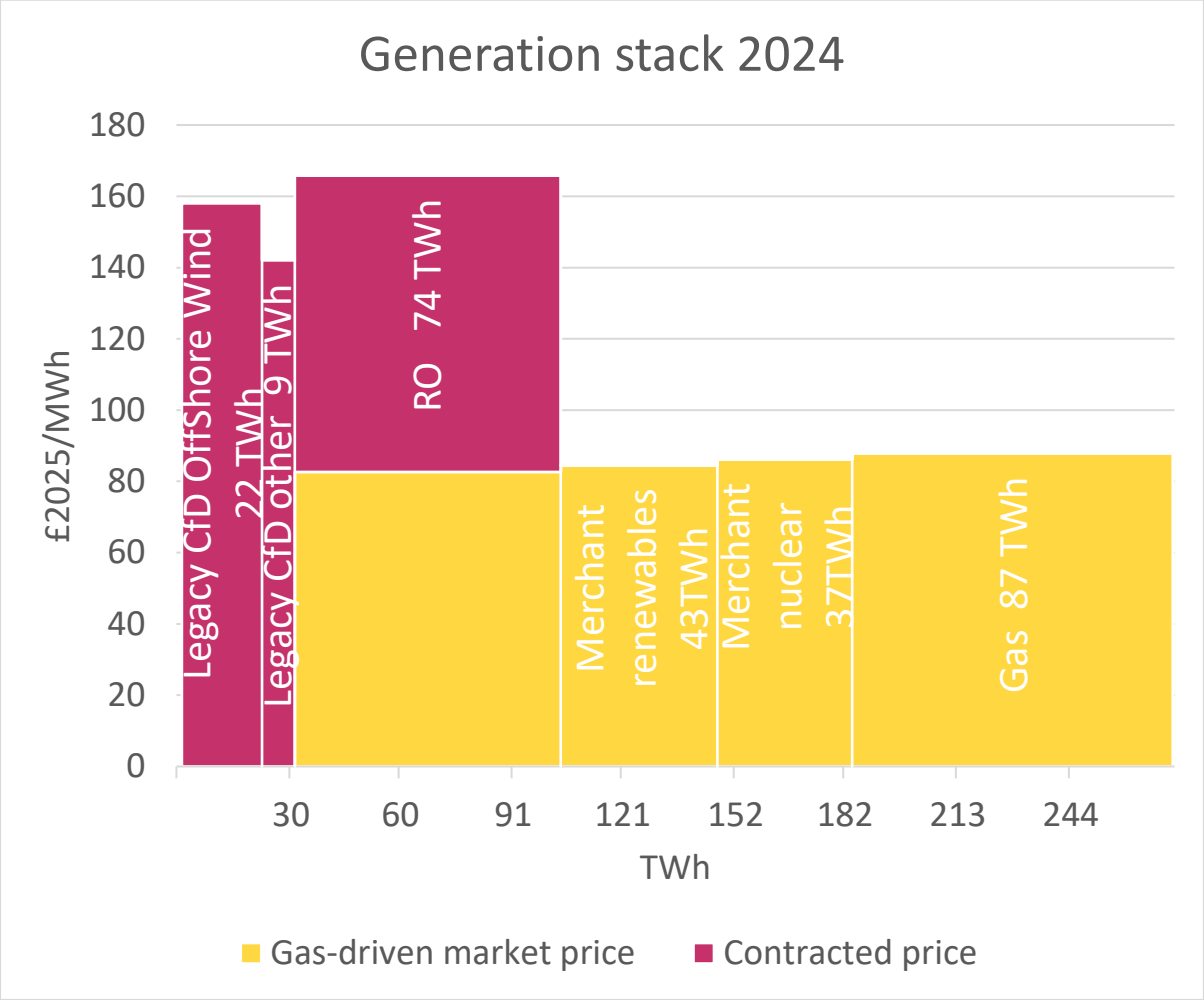
In 2024 (Figure 3a),[5] gas-driven market prices drove revenues for close to 90% of generation (indicated by the *width* of the orange bars on the x-axis)[6] and represented around two-thirds of total cost (indicated by the *area* of orange bars).

[4] Based on Ofgem wholesale cost allowance methodology for the period April-Sept in 2021 and 2025. Prices CPI adjusted to £2025 currency year.

[5] 2024 was used for this analysis as the last full year of data available.

[6] Actual market prices received by low carbon generation are generally slightly reduced by the effect of price cannibalisation. LCCC modelling puts this effect at between 5-10% currently, though the effect is expected to get stronger as the share of renewables increases. In the above comparison between 2024 and 2028, we make the conservative assumption that the cannibalisation rates are unchanged. [add reference]

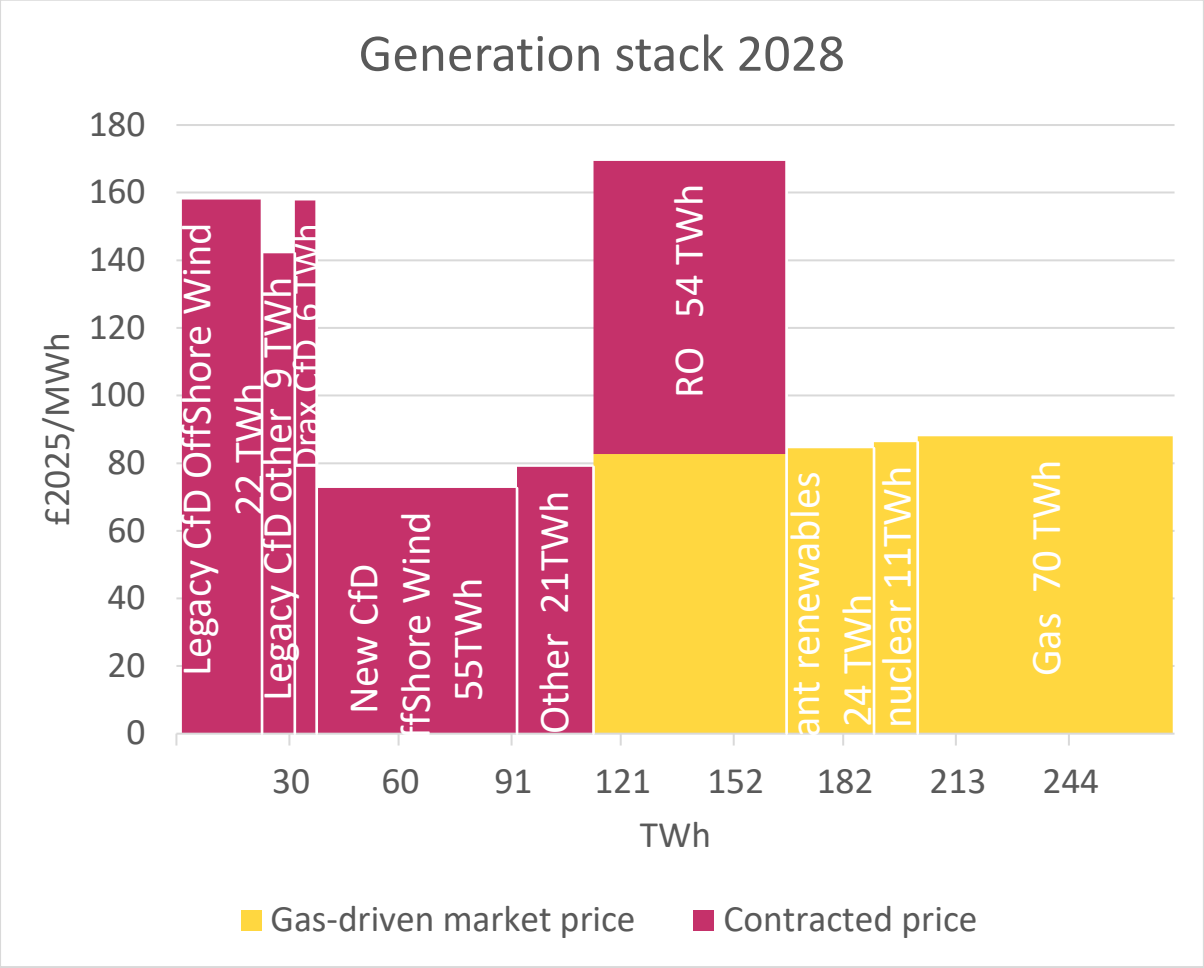
***Figure 3a**: Generation stack 2024*



These figures are expected to change significantly in coming years as recently contracted wind plant come onto the system under CfDs – which fixes prices and starts to decouple revenues from gas prices. These changes are described further below.

By 2028 (Fig 3b), gas-driven market prices will drive revenues for around 60% of plant on the system, and be responsible for just under half of the total cost (again, indicated by the *width* and *area* of the orange bars, respectively).

Figure 3b: *Generation stack 2028*



The changes between now and 2028 for each the main categories are as follows:

- Legacy CfD generators (stays at 31TWh)[7]. Older CfD contracts have high average strike prices of £140-160/MWh in today's prices due to the high price for the early rounds of the CfD, which were set by government rather than through CfD auctions. The total cost (shown by the area of these bars) is about 15% of the total for the system as a whole.
- New CfD contracts (increases to 76 TWh). This includes successful bids for CfD contracts in auction rounds 1-6 that are not already included in the legacy category, which can be expected to be active by 2028.[8]
- Renewables obligation (decreases from 74 TWh to 54 TWh). These generators receive the market price of around £85/MWh (orange bar), as well as revenues from the sale of renewable certificates (green bar), worth around £80/MWh on

[7] The 'legacy' category in the chart includes all generators who are operating in 2024/25 on a CfD contract or pre-CfD investment contract. Data based on latest LCCC actual CfD generation dataset.
[8] Excluding Hornsea Four (2.4GW) and Norfolk Boreas (1.4GW) projects which withdrew their contracts after the auctions.

average. Around half of the reduction to 2028 is due to the 20-year RO contracts expiring over time. The other half is due to Drax coming out of the RO scheme. Roughly half of Drax's output will be covered by a fixed price CfD, the rest will operate as merchant.

- Merchant renewables (decreases from 43 TWh to 24 TWh). This component is expected to reduce as wind plant currently operating under merchant reach their contract start dates and start operating under fixed price CfDs. This is partially offset as around half of Drax output starts operating as merchant, adding to current hydro and biomass plants that operate as merchant plants.
- Merchant nuclear (decreases from 37 TWh to 11 TWh) reflecting the retirement of Hartlepool and Heysham 1 power stations.
- Gas generation (decreases from 87 TWh to 70 TWh), flexing generation downwards as the share of renewables increases.

Together, these structural changes reduce average prices by about £7/MWh, saving £20/year for the average consumer, assuming gas prices remain constant. The changes also make electricity prices less sensitive to gas price variation. The shift towards a fixed price cost structure means that by 2028, only around 45% of the costs are driven by market prices compared to 65% in 2024. This would reduce consumers' exposure to price rises should there be a repeat of the gas price crisis.

One factor that has not been taken into account in these figures is the tendency for low marginal cost renewables and nuclear on the system to depress wholesale market prices. This is shown in the charts at a rate of up to 6% based on LCCC modelling.[9] This effect will be stronger by 2028 as the share of renewables increases, leading to further cost savings for consumers. Part of UKERC's future work in this area will be to investigate and quantify this effect.

5. Reducing Legacy Policy Costs: Pot Zero

A significant policy option for further strengthening these downward trends in prices could be to renegotiate the contracts for legacy CfDs and the RO generators. The potential impact of this option is investigated in UKERC's our 'Pot-Zero' report. The latest Pot Zero update revisits proposals to reform support for legacy low-carbon generators under the Renewables Obligation (RO) scheme. At present, these generators receive support payments in addition to high wholesale electricity prices, which arguably result in excessive costs for consumers.

Pot Zero offers a solution by converting RO-supported projects (and possibly early, high-priced, CfD contracts) into CfDs through an auction pot for existing plant (hence 'Pot Zero' CfD). CfDs guarantee a strike price and require generators to return excess revenues when market prices exceed that level. This mechanism would stabilise prices for both consumers and generators, breaking the link between

[9] https://www.lowcarboncontracts.uk/resources/faqs/supplier-cfd-rab-faqs/

electricity and gas prices for legacy renewables and ensuring greater affordability overall. Industry supports the idea, principally on the basis that even a low Pot Zero CfD price provides greater long-term revenue stability than uncertain returns in a future wholesale market subject to considerable price cannibalisation.

Implementing Pot Zero could deliver substantial consumer savings, estimated at between £2 billion and £8 billion per year in the late 2020s. This would equate to a reduction in prices of £7/MWh to £25/MWh, worth in the region of £20 to £80 per customer per year. The scale of these savings depends on strike price scenarios and future market conditions. Timing is critical: early adoption, starting in 2027, would maximise benefits and prevent windfall profits as RO-supported plants begin to retire.

6. Conclusions

Three years after the energy crisis, residential electricity prices in the UK 2025 are still historically high in real terms, and the UK is amongst the highest priced countries for electricity.

Despite the rising impacts of policy costs, network charges and other factors, wholesale market gas price increases continue to dominate the real terms increase over 2021, with wholesale costs increasing by £112, or 66% of the overall rise in the electricity bill for a typical household.

Our forward-looking analysis suggests that this is changing. As new CfD-backed wind projects come online and merchant renewables decline, the impact of gas prices will reduce, since increasing volumes of generation will be delinked from gas prices. While gas-linked revenues accounted for 90% of generation and two-thirds of total costs in 2024, this should fall to 60% and just under half of costs by 2028. Alongside other changes to the generation mix and market this could lower average prices by £7/MWh and save consumers around £20 annually.

However, this ‘automatic’ reduction in the share of gas prices in bills is limited in effect by the volume of renewable generation receiving a CfD that is at or below the wholesale price. Going further to reduce bills requires action on legacy policy costs. UKERC’s Pot Zero proposal targets the most substantial policy cost on electricity bills, the RO, worth £102 per typical household per year. Moving legacy RO-supported projects into CfDs could accelerate decoupling of electricity and gas prices and deliver consumer savings in the range of £2-8 billion per year in the late 2020s, equivalent to between £20-80/year for the typical consumer.

In future work, UKERC will explore options to help hold CfD prices down, reduce the costs of curtailment, minimise the costs of network upgrades and refurbishment, and mechanisms to reallocate costs between categories of consumer, for example, through tariff reform.

7. Annex 1: Glossary of Terms

- AAHED = Assistance for Areas with High Electricity Distribution Costs
- BSUoS = Balancing System Use of Services
- CfD = Contracts for Difference
- CM = Capacity Market
- CO = Core operating costs
- DRC = Debt-related costs
- DUoS = Distribution Use of Services
- EBIT = Earnings Before Interest and Tax
- ECO = Energy Companies Obligation (includes Great British Insulation Scheme)
- FiT = Feed in Tariffs
- IC/SMCC = Industry charges and Smart Metre Net Cost Change allowance
- NCC = Network Charging Compensation scheme
- RO = Renewables Obligation
- TNUoS = Transmission Network Use of Services
- WHD = Warm Homes Discount

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