EPRI

Quick Insights

Energy Crisis in the United Kingdom and the Price Cap

RESEARCH QUESTIONS

What factors underlie the recent surge in residential energy bills across the United Kingdom (UK)? How has the price cap mechanism worked in moderating costs for electric and gas consumers?

KEY POINTS

- The energy price cap, initially a safeguard mechanism, now effectively sets retail tariffs and may require structural reform for a volatile energy market.
- The energy cost for a typical UK household jumped from £1,277 to £1,971 as of April 1, 2022. This was a 54% increase from the cap that came into effect on October 1, 2021, reflecting global energy market volatility.
- In mid May, the UK regulator, Ofgem, said the cap would likely increase by a further 42% to around £2,800 on October 1, 2022, when the next cap period comes into effect. [1]
- Current retail prices reflect the maximum allowable unit charges for natural gas and electric service under the UK's price cap mechanism, but many suppliers claim the cap is too low for cost recovery.
- Distribution network costs, which account for the second largest share of retail prices, also increased significantly as of April 1 to allow suppliers to claim for additional "supplier of last resort" costs arising from taking on customers from previous bankruptcies.

INTRODUCTION

Over the past two decades, increasing reliance on gas-fired power generation has tightened connections between both electric and gas infrastructures and markets. High-efficiency combined-cycle plants and fast-acting simple cycle turbines have become essential not only for serving load but also for accommodating growing levels of variable output wind and solar capacity. Meanwhile, continued expansion in gas-fired home heating and other applications has further increased demand for gas, with typical domestic properties in the UK using three to four times as much gas as electricity (by energy volume).

This Quick Insight examines policy and market factors underlying the ongoing energy crisis in the UK and the implications relating to fuel poverty, decarbonization, and market resilience to global supply shocks.

THE PRICE CAP MECHANISM

The UK government required Ofgem (Office of Gas and Electric Markets), the "Regulator," to introduce a price cap on retail energy rates in January 2019 with the objective of protecting consumers by preventing excessive profit-taking without dampening retail competition among energy suppliers. The cap sets the maximum tariffs suppliers are allowed to charge consumers on variable rate plans. Previously, some suppliers had increased their rates to levels well above market prices, penalizing customers who failed to switch to other providers due to lack of awareness or understanding. At the time of its introduction, the price cap was some £200 (or about 20%) higher than the average tariffs widely available and some 30% higher than the lowest tariffs. The price cap stayed at these approximate levels until late 2021.

Ofgem's cap scheme involves the setting of maximum unit charges that energy suppliers can include in their standard variable and default tariffs, covering both monthly service (standing charges) and the unit price of commodity electricity and gas (usage charges). The idea is that most consumers will pay a lower tariff chosen from among the offerings available from competitive suppliers or choose a longer-term fixed-price deal, and the cap will provide a safeguard, protecting the most vulnerable while still allowing all reasonable costs to be passed on to customers.

The cap is adjusted twice a year—a "Summer" tariff, effective as of April 1, and a "Winter" tariff, effective as of October 1. Ofgem announces the new cap some two months in advance of the effective date, after completing an evaluation of wholesale energy costs, forward contracts, the retail prices index, and other factors. The cap is intended to fairly reflect the cost of supplying energy in the period ahead and allow some cost recovery. Customers on variable or standard rate tariffs cannot be charged more than the cap rate.

Domestic Cap, Global Market

Figures 1 and 2 show long-term stability in wholesale gas prices plus recent price increases that have contibuted to raising the cap. However, the price cap implemented on October 1, 2021, did not anticipate the unprecedented spike in global wholesale gas prices that occurred late last year. And the price cap that went into effect on April 1, 2022, was announced in February, about three weeks before Russia invaded Ukraine and world governments responded, generating another spike in prices.

Figure 1: Day-ahead gas prices in pence (p) per therm (Credit: Ofgem)

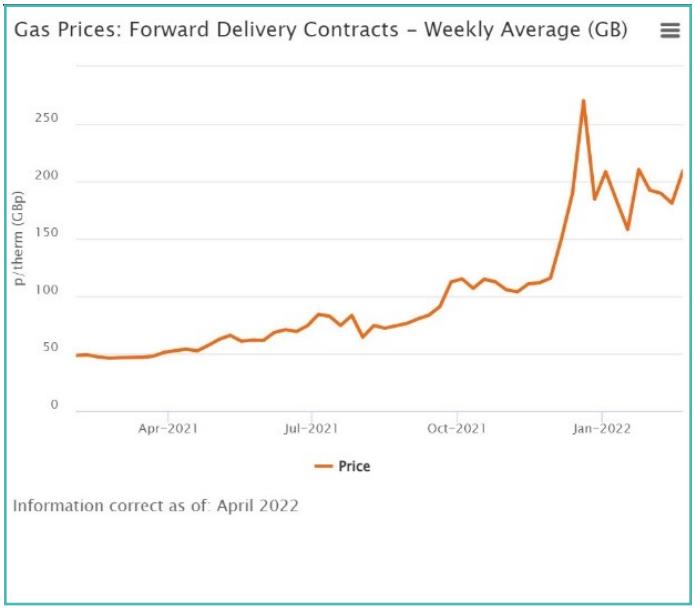

Figure 2: Forward delivery contracts in pence (p) per therm (Credit: Ofgem)

Figures 3 and 4 show the price cap levels for gas and electricity and how they track wholesale prices. [3] The current price cap lags the actual wholesale energy costs. The cap rate scheduled to go into effect on October 1, 2022, to be announced in July, will account for the impacts of the war in Ukraine—as well as the global response—on energy markets. Analyst consensus forecasts estimate another substantial price cap increase, and Ofgem's latest statement concurs. [4]

Figure 3: Gas price cap's correlation with wholesale prices in pence (p) per therm (Credit: Ofgem)

Figure 4: Electricity price cap's correlation with wholesale prices in price (pounds) per megawatt-hour (Credit: Ofgem)

In effect, every UK household is currently on the cap (or will be when fixed-term deals end). Table 1 characterizes bill impacts for a typical household using an average amount of energy (2900 kWh of electricity and 12,000 kWh of gas), subject to default tariffs, and paying by direct debit. If forecasts are accurate, typical household energy costs will more than double across 2022.

Table 1: Bill impacts for a typical UK household with average energy use

Cap Period	Annual Bill	Increase Over Previous Period
From October 1, 2021	£1,277	12%
From April 1, 2022	£1,971	54%
From October 1, 2022	£2,800 (forecast)	42%

Figure 5 shows the cost component breakdown for Ofgem's last two price cap periods. [5] The wholesale price component more than doubled as of April 1, while the distribution network component increased by 39%. Much of this increase also is attributable to rising gas prices, via rate-based recovery of utility payments to energy suppliers that had been underpaid under the cap. Network costs are likely to increase going forward.

Figure 5: Make-up of the energy price cap in cost (pounds) per typical household (Credit: Ofgem)

Because wholesale pricing has remained well above the cap for sustained periods, many smaller suppliers have faced financial diffiulties and some have gone bankrupt. The latest and largest to date is Bulb Energy, which had some 1.7 million customers at the time. Licensing rules require other suppliers to accept customers allocated to them by Ofgem due to a bankruptcy. But remaining market participants have been reticent, arguing that they will lose additional money for every new customer they take on at the cap rate.

HOUSEHOLD IMPACTS AND FUEL POVERTY LEVELS

Table 2 presents actual rates from a residential household in the UK immediately before and after the April 1 price cap went into effect. While the unit cost of electricity increased by a larger amount on an absolute basis, the unit cost of gas more than doubled. This has potentially significant financial implications because the average consumer uses three to four times as much gas as electricity over the course of a year.

Table 2: Actual 2022 energy tariffs for a sample residential household

Energy Commodity	March 2022		As of April 1, 2022 (price cap rates)	
	Daily Standing Charge	Unit Cost	Daily Standing Charge	Unit Cost
Electricity	24.1 p	20.1 p/kWh	43.12 p	28.46 p/kWh
Gas	23.8 p	3.4 p/kWh	27.22 p	7.48 p/kWh

The UK defines a household as being in fuel poverty when the household income after paying energy costs (for gas and electricity supplied to the home) is less than 60% of the average household's disposable income after housing costs. Under this definition, 13% of households—3.1 million—were in fuel poverty in 2020. [6] Based on the average net household income in 2021 of £31,400, the number of households experiencing fuel poverty increased to about 6.3 million (around 25%) as of April 1. By the end of 2022, more than one-third of the UK's 28 million households could be in fuel poverty.

DECARBONIZATION IMPLICATIONS

In many ways, the volatility in wholesale gas prices that has put severe financial strain on millions of households also has reinforced the non-environmental benefits of decarbonization. Significant increases in nuclear and renewables combined with smart energy management may provide price stability and increase resilience by potentially insulating the UK to some extent from global supply cost pressures. However, transitioning to carbon-free sources and smarter systems may be more costly in the near term.

Along with increases in energy costs, comparatively high inflation (approximately 7.8%) is outstripping average wage increases (approximately 4.2%). [7] [8] The UK government has also recently frozen a number of tax advantages and raised others. These factors potentially have placed even greater financial pressure on households and businesses and created market and investment uncertainty over how attractive the energy sector may be for investors. It remains to be seen how or if this volatility may have an impact on energy system developments.

For example, uncertainty may affect the transition to electric transportation in the UK, as well as the decarbonization of residential heating. At present, the capital cost or monthly lease cost for an electric vehicle (EV) is greater than the petrol or diesel equivalent. While running costs are lower for EVs, the financial case on a total-cost-of-ownership basis is not yet clearly established for the majority of households. Petrol and diesel prices at the pump have risen by 29% over the year to April 2022, [9] a rate much lower than that of household energy, which has risen by 73% over the same period, [10] effectively worsening the case for EVs.

More broadly, there is evidence of households replanning their finances by delaying, deferring, or cancelling some large and optional purchases. Typically, investment in energy efficiency measures and on-site generation requires large capital outlay for longer-term financial gain. Consumers may be reluctant to take these measures in the near term, potentially stalling decarbonization progress. Some additional creativity in financing arrangements, payment plans, and policy support may be required.

CONCLUSION: OUTLOOK FOR THE PRICE CAP MECHANISM

Proponents of deregulated retail markets have commented that the market is working because the actual cost of energy is reflected in the tariffs being offered, and that it is the price cap itself that is causing the supplier bankruptcies. While the original intent of the cap mechanism may have been to serve as a safeguard mechanism at a time of relatively stable market conditions, the cap is now setting the rates for customers.

Ofgem is conducting a range of consultations to consider significant changes to the price cap mechanism. [11] Several potential systematic challenges with the current price cap mechanism may need to be addressed, such as the following:

- Retailers typically hedge their energy purchases through a combination of long-term contracts and real-time wholesale market purchases, basing their procurement strategy on many variables such as number of customers, demand forecasts, seasonal effects, and price cap forecasts. Retailers that found they needed to buy significant volumes of energy in near-real-time at prices above the cap ran into financial difficulties. During the most recent cap period (October 2021 to March 2022), Ofgem estimates that retailers paid £900m for what is referred to as "price cap demand"—effectively the losses borne by retailers. [12]
- Customers are free to switch suppliers within 28 days of notification. During a period when the price cap falls, retailers could be left with the opposite problem of having too much energy purchased at a cost higher than the cap and too few customers who may well have switched to an alternative supplier able to buy at lower wholesale prices.
- Movements historically have been small, with retailer losses and gains typically being smoothed out over the medium term (providing a retailer had the financial resilience to weather "dips"). The dramatic rises over the past six months effectively exposed weaker businesses that could not sustain themselves through to the next price cap period, where there could be the opportunity to recover losses. As it happens, given further global events, the next price cap period may exacerbate the problem.

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