Cadent
Your Gas Network

Volume to value:
Why gas still matters

September 2026

Executive summary

Gas's role is changing. The question is no longer simply how much gas the system uses across the year, but how much value it provides when the electricity system is under pressure. Its value is increasingly determined by its availability, the speed of its response, and its ability to sustain output over time. As Great Britain becomes more dependent on weather-led generation, gas is moving from a high-volume fuel to a high-value source of flexibility and reliability.

Key Findings

1. **Gas is shifting from volume to value.** Average gas generation has fallen as renewables have grown, but its system value is increasing as it helps balance the system when renewable output is low and demand is high.

2. **Maximum daily gas demand is rising, not falling.** Figure 2 shows that maximum daily average gas generation has increased by 55% since 2015, even as average generation has reduced. This shows that the system still needs gas to work harder when renewable output falls or demand rises.

3. **The recent heatwave showed gas's role in meeting total demand.** During June's heatwave, gas ramped up by 12 GW within a few hours as solar fell away, wind remained low and demand stayed elevated due to cooling needs. It then sustained output overnight and met around half of the electricity demand.

4. **Prices reflected system tightness, gas contained them.** On the 26 June, prices peaked to £468/MWh, around five times the daily average. Prices rose because the electricity system needed reliable capacity as solar fell away, wind was low, but demand remained elevated. Gas did not create the tight conditions; it helped contain them.

5. **Gas-loss modelling shows the value of dispatchable capacity.** Modelling for the 26 June showed that if gas had been unavailable during the period of highest need, prices could have risen to more than £1,600/MWh. This shows that gas helped contain scarcity impacts and kept prices lower than they otherwise could have been.

Recommendations

→ **Update resilience planning to reflect emerging summer stress events.** System planners should assess adequacy against Hitzeflaute-style conditions, where low wind, falling solar and elevated cooling demand combine to create evening and overnight reliability risks.

→ **Maintain the essential gas infrastructure that underpins system resilience**. Storage and networks should be treated as strategic assets because they enable dispatchable generation and support security of supply.

→ **Ensure gas assets are sufficiently compensated to remain available for as long as the system needs them**. The Capacity Market, or an equivalent long-term resilience mechanism, should reward firm dispatchable capacity for its ramping capability and ability to sustain output during periods of system stress.

The changing role of gas

1: Why gas still matters

Gas has been central to Great Britain's energy story for decades. It heats homes, supports industry, provides flexibility to the power system and the gas network remains one of the country's largest and most valuable infrastructure assets. For millions of households and businesses, gas is not an abstract part of the energy mix; it is the way they have warmth, hot water and food.

Whilst the transition to net zero requires a reduction in unabated fossil gas use over time, the conversation is more nuanced than simply asking whether gas use rises or falls. **The more important question is what value the energy system continues to need from gas in the long term?**

Gas has characteristics that make it valuable in a changing system. It can be stored, moved through the existing extensive network and used quickly when demand rises. Storage, including in large underground facilities such as salt caverns, provides long duration resilience through winter and helps the system manage uncertainty. This ability to hold energy before it is needed is an important distinction between gas and electricity, and one that becomes more important as the electricity system becomes more weather dependent and reliability is intermittent

In power generation, gas has historically provided both energy and reliability. As renewables grow, the overall energy contribution from gas is expected to reduce. However, its reliability value may become more important, not less. The central point of this paper is therefore simple: gas is moving from a role defined by volume to one increasingly defined by value.

2: From volume to value

The growth of renewables is reshaping the role of gas in the electricity system. The GB generation mix has changed markedly since 2009. Figure 1 shows gas accounted for 47% of generation in 2010 but has fallen to 26% by 2025 and 25% in the first half of 2026. Over the same period, wind's share of generation has increased from 1% in 2009 to 29% in 2025 and 32% in the first half of 2026, while solar has grown from virtually zero in 2009 to 7% in 2025 and as much as 14% in July 2026. Electricity imports have also become a more material part of the mix, rising from 2% in 2009 to 15% in 2025. Whilst they provide useful diversity, particularly through access to neighbouring markets such as France, imported electricity cannot be treated as firm capacity. Import availability and direction can change quickly depending on conditions in connected markets, and recent periods of system pressure have shown that securing imports can come at a significant cost, with prices reaching £1,400/MWh during the June heatwave – as high as 20 times the average price.

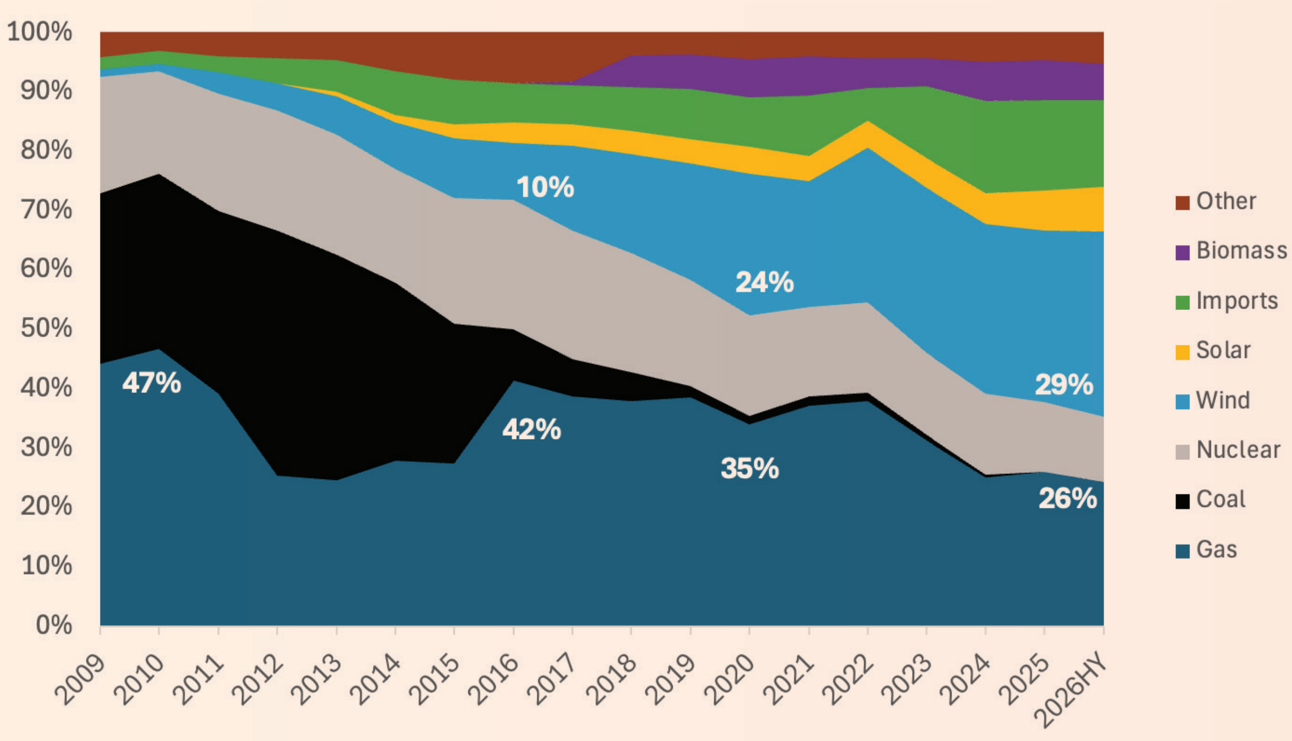


Figure 1: GB Electricity Generation Mix (%) by Fuel Type, NESO, Cadent analysis

This is where the distinction between volume and value matters. Figure 2 shows that while average generation from gas power stations has fallen over time, the maximum daily average has risen, up 55%. In other words, gas is being used less across the year but still has to work harder on the days when the electricity system needs it most.

This reflects a shift from providing steady annual volume to providing targeted flexibility during periods of pressure, such as evening peaks, sudden drops in renewable output or days when demand rises faster than expected. Gas is therefore increasingly a balancing asset to maintain stability when the system is under pressure.

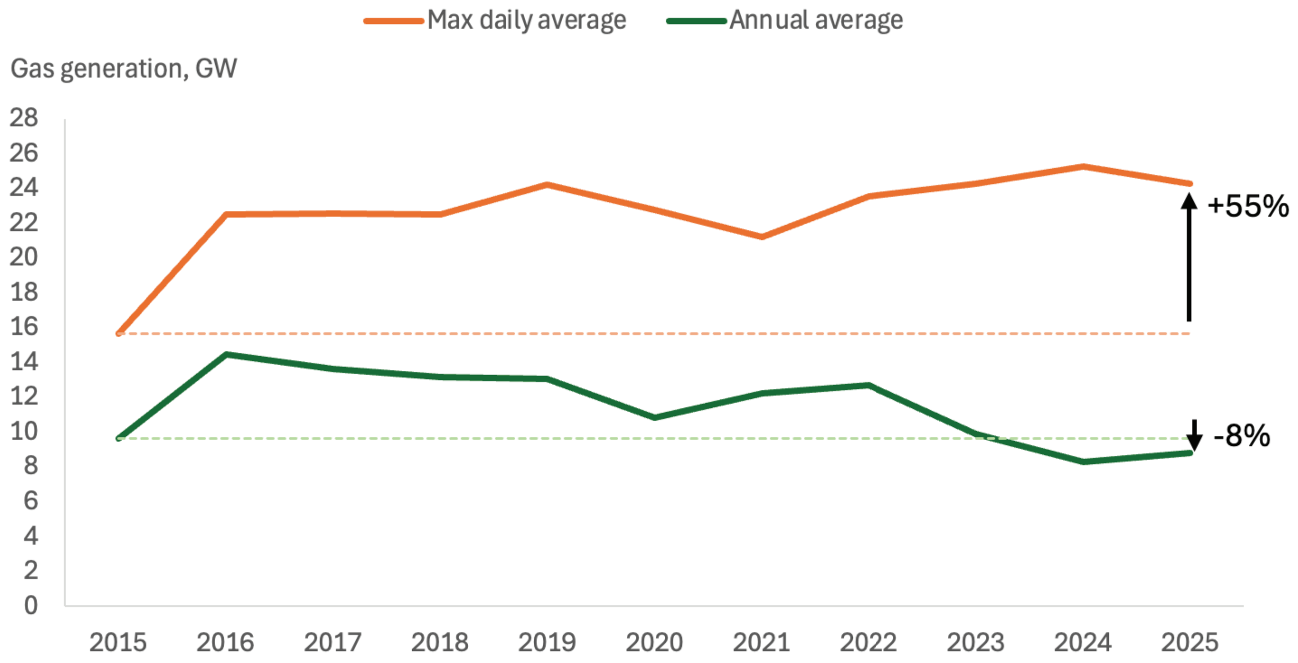
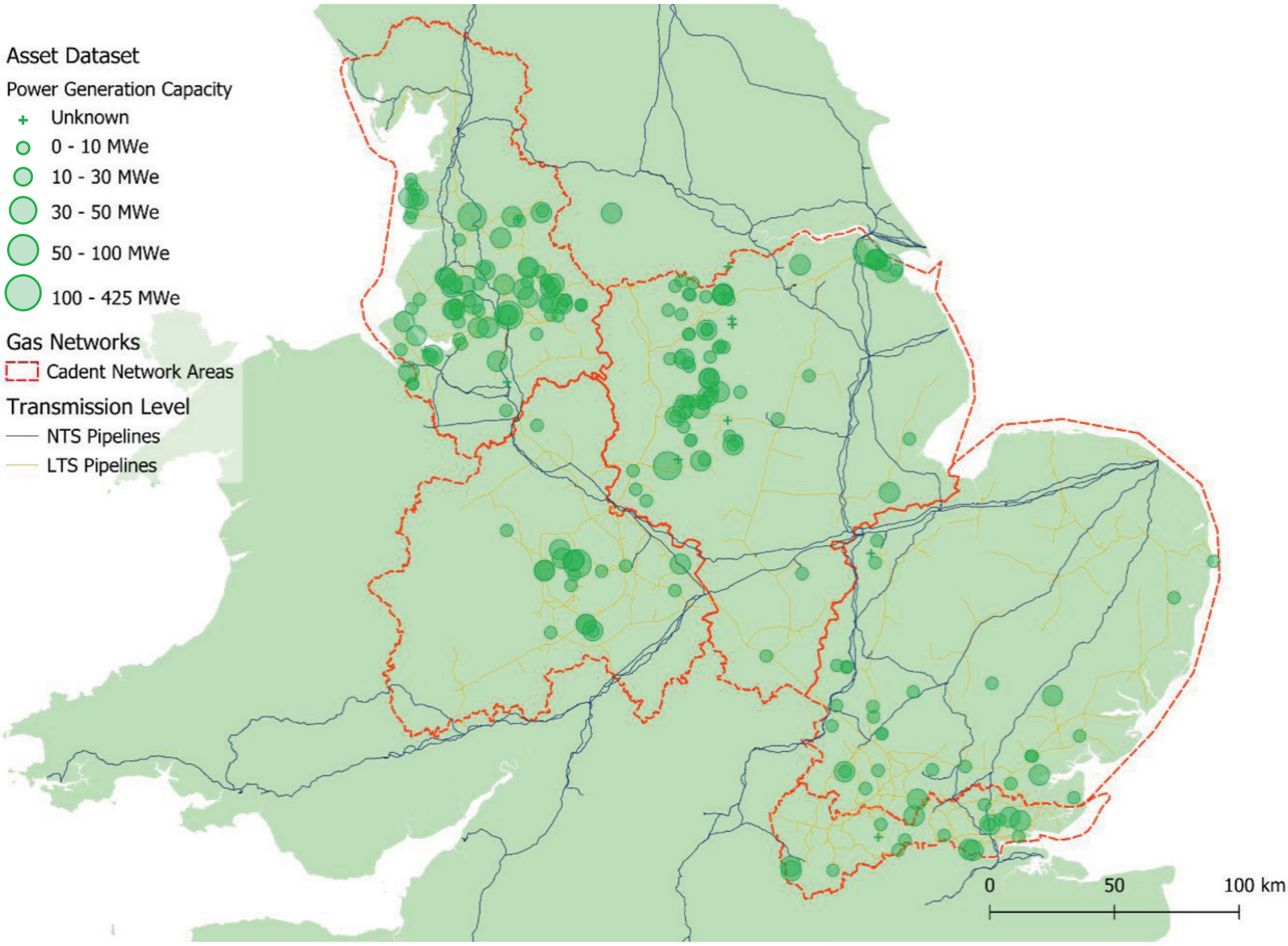


Figure 2: Gas generation showing half-hourly max daily average (GW) and annual average (half-hourly) (GW), NESO, Cadent analysis

We see this on our own network. We have over 200 gas-to-power sites connected across our distribution networks, providing around 3 GW of electricity generation capacity and around 4 TWh of annual gas demand. These assets are not all large transmission-connected power stations, they are predominantly smaller, distributed gas engines embedded close to local demand.

The strongest concentrations are in the North West and East Midlands, where they help balance the electricity system and provide local resilience when renewable output is low or demand is high. A significant proportion of the flexibility needed by the power system is already connected to our regional gas networks.



Power generation capacity across Cadent network – Progressive Energy for Cadent

3: From Dunkelflaute to Hitzeflaute

As the electricity system becomes more dependent on renewable generation, it also becomes more exposed to the weather conditions that drive output from wind and solar. This means system stress is increasingly shaped by periods when weather patterns reduce renewable output at the same time as demand remains high.

Figure 3 shows how gas provided system value during the January 2025 Dunkelflaute, when low wind output coincided with limited support from electricity imports. As wind generation fell and demand still needed to be met, gas generation increased by around 11 GW over five hours. This demonstrated how quickly gas-fired power stations were able to respond when system conditions tightened. The event was not just a short peak. Over the following days, gas sustained a high level of output, averaging around 57% of total generation and peaking at 27 GW. It showed the practical role gas played during a prolonged period of low renewable generation by filling the gap between demand and available low-carbon supply. This helped to maintain security of supply, providing sustained flexibility when similar weather conditions affected both Great Britain and neighbouring European markets.

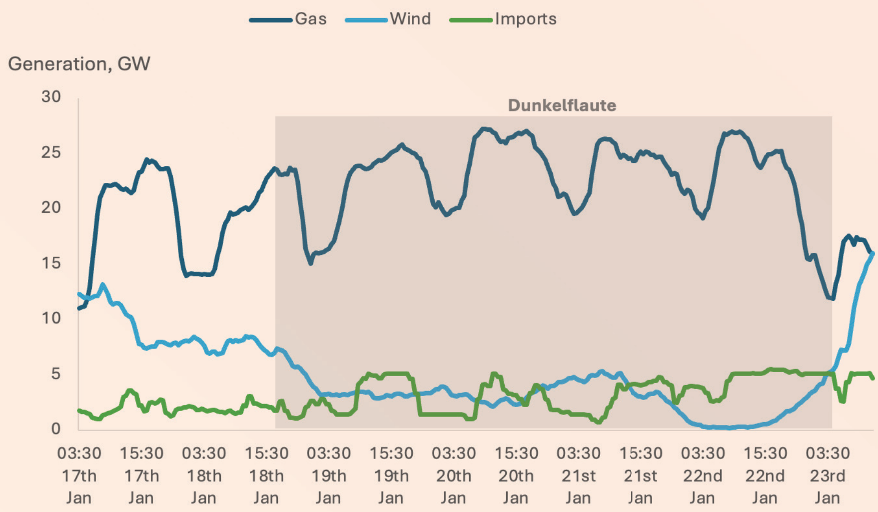


Figure 3: January 2025 Dunkelflaute, NESO, Cadent analysis

June showed a different kind of system stress: Hitzeflaute. If Dunkelflaute is the winter risk of low wind and high demand, Hitzeflaute is its summer equivalent: low wind, and high cooling demand. This is demand that persists just as solar output falls sharply after 8pm. The result is an intense reliability challenge that exposes how quickly the system still needs firm gas-fired capacity.

Figure 4 brings this into focus. As solar began its daily fall to zero and wind couldn't ramp up, gas generation rose by 12 GW within a few hours to meet the evening cooling peak. On the 22 June, gas generation reached 16.5 GW and then carried an average c.50% share of generation until 8:30am on the 23 June, when solar output started to recover. In practice, gas met around half of electricity demand for 14 hours, underlining its value as a rapid and sustained source of system resilience.
In comparison, batteries played a limited role. They helped smooth parts of the evening peak, but their contribution was short-duration and marginal compared with the scale and length of the system need. Once solar had fallen away and demand had to be met through the night, the system relied on firm gas generation.

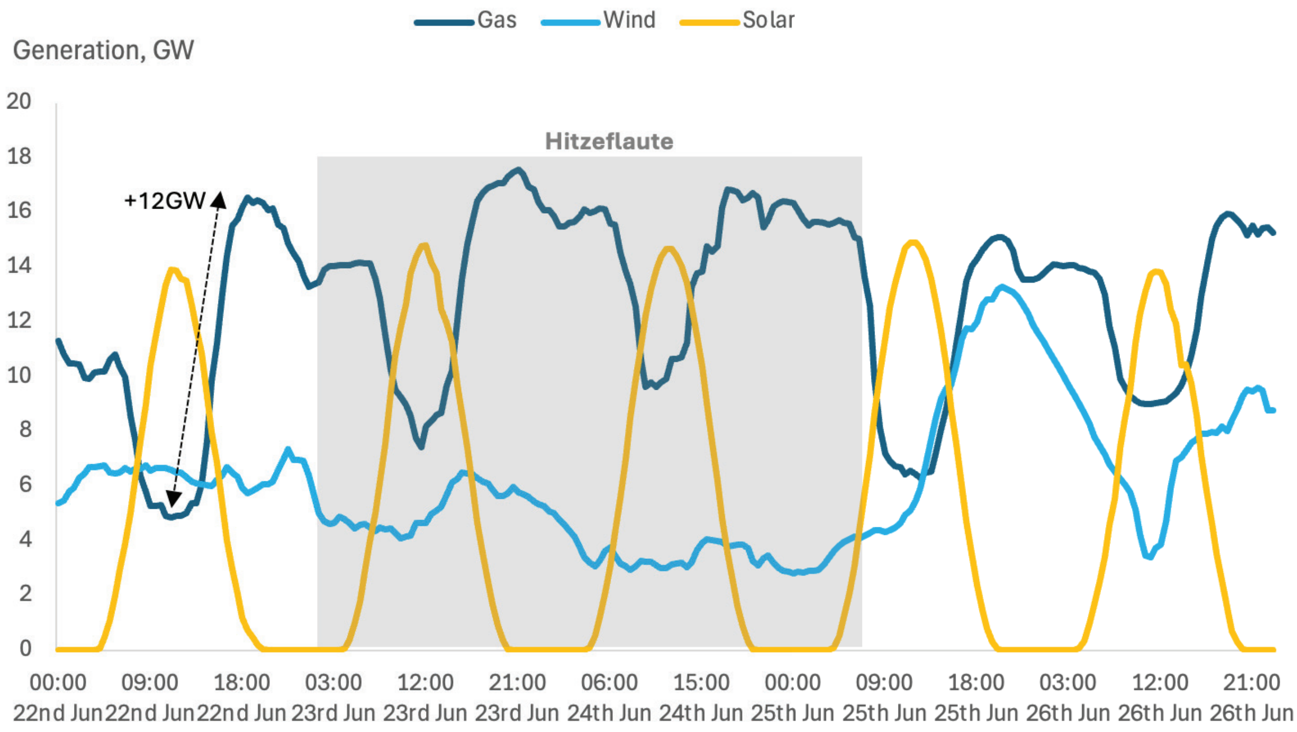


Figure 4: June 2026 Hitzeflaute, NESO, Cadent analysis

4: Price of energy security

The Hitzeflaute period did not only test physical system resilience, it also showed how the value of security is revealed through prices. Figure 5 shows wholesale electricity prices rising as solar output fell away in the evening and the system had to rely more heavily on firm, dispatchable generation. Across the five-day period, average prices when solar output was above 10 GW were around £58/MWh. When solar fell below 1 GW in the evening, average prices rose to around £170/MWh. That means the evening reliability requirement added, on average, around £112/MWh to wholesale prices, almost a threefold increase compared with the high-solar periods earlier in the day.

The pattern was visible over the week. On the 22 June, average evening prices increased to around £109/MWh, compared with around £7/MWh during the high-solar period, an increase of just over £102/MWh. The sharpest signal came on the 26 June, when the pressure became much more acute and average evening prices reached around £317/MWh, compared with around £88/MWh during the high-solar period.

Prices then peaked at £468/MWh at 7:30pm, underlining how quickly the value of reliable, dispatchable capacity rises when solar falls away and the system tightens.

These movements need to be understood in context. They were not simply a story about gas being expensive. They were a market signal that the electricity system was under pressure and was willing to pay for reliability at the moment it was most needed.

Gas provided that reliability because it is flexible, dispatchable and able to sustain output when weather-dependent generation is unavailable. In that sense, the 26 June spike to £468/MWh, and the wider evening price uplift across the period, represent the cost of energy security being met by the most reliable and dispatchable fuel source currently available at scale.

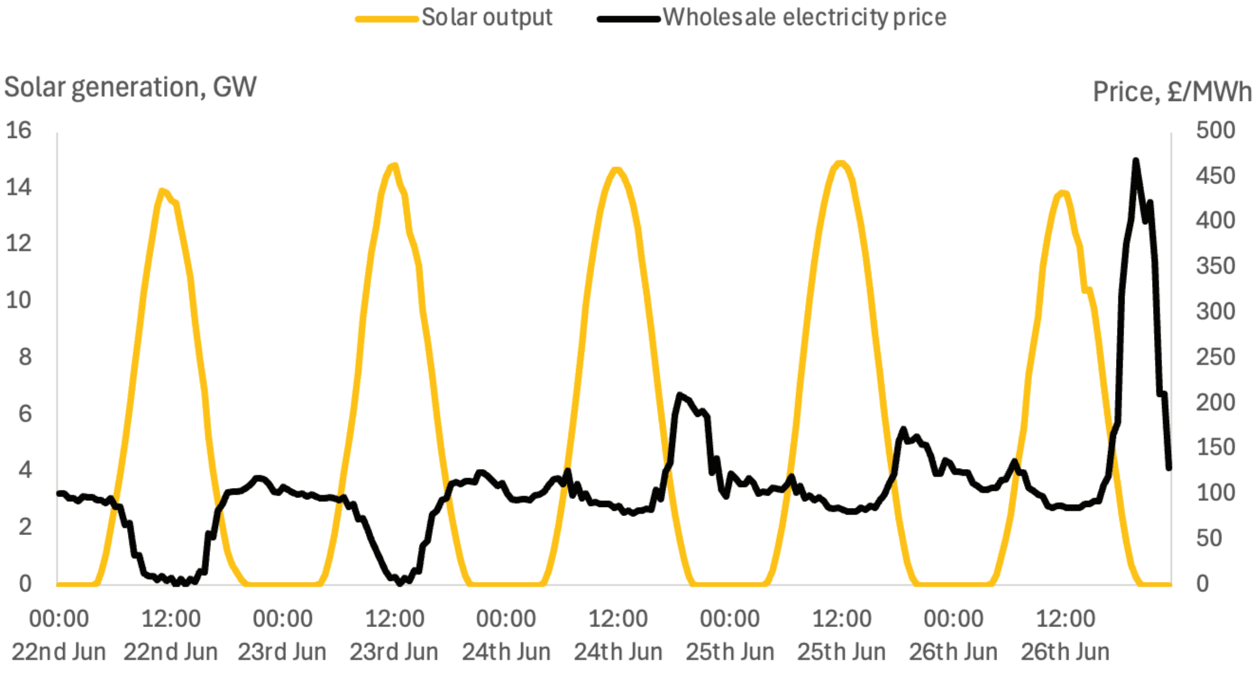


Figure 5: Wholesale electricity prices (£/MWh) and solar output (GW), NESO, Cadent analysis

To test the value of gas during the tightest point of the Hitzeflaute, we modelled a simple counterfactual for the 26 June: what would have happened to wholesale prices if there had been less gas available on the system when solar output was falling, wind was low and demand remained elevated. The purpose was not to predict an exact market outcome, but to illustrate the scale of price exposure when reliable dispatchable capacity is reduced during a period of system stress.

The modelling uses the observed the 26 June price spike as the starting point. We then applied two illustrative gas-loss scenarios of 3GW and 5GW, assuming these reductions would create scarcity conditions in which prices rise more sharply when spare dispatchable capacity is limited, and weather-dependent generation cannot fill the gap.

The results show why gas mattered on the 26 June. Under the modelled scenarios, reducing gas availability would not have produced a small or linear effect. It would have pushed the system further into scarcity, increasing the likelihood of sharper price escalation at exactly the point when consumers and the wider system most needed a dependable supply.

Figure 6 shows that, with less gas on the system, prices could have risen from the observed the 26 June spike of £468/MWh to between around £765/MWh and more than £1,600/MWh, depending on the level of gas loss and the severity of scarcity stress. At the upper end, prices would have been around 18 times higher than the baseline level before the stress period began. **Gas did not create the tight conditions on the 26 June, it helped contain them. By providing reliable and dispatchable capacity when the system was most exposed, gas helped keep prices lower than they otherwise could have been.**

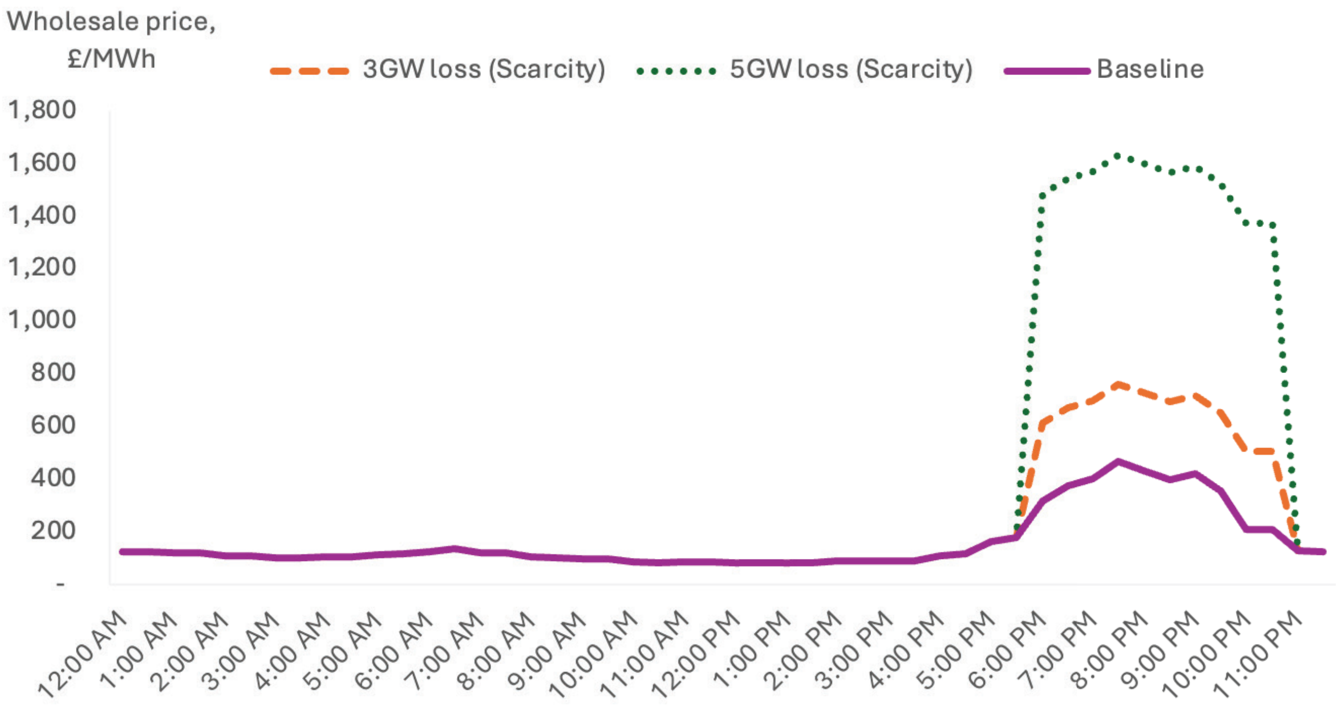


Figure 6: Modelled change in wholesale electricity prices due to loss of gas, Cadent analysis

5: Gas as part of the flexibility mix

The value of gas is not just in how much energy it provides over a year, but in when it is available and how quickly it can respond. During periods of very high demand, very low renewable output, or rapid changes in system conditions, gas can provide firm and flexible capacity at scale. The recent Hitzeflaute made this visible: gas generation increased by 12 GW within a few hours, was sustained through a 14-hour overnight period, and provided an average 50% share of generation while solar output was unavailable.

A balanced assessment should also recognise the alternatives. Batteries, demand-side response, interconnectors, long-duration storage, nuclear and low-carbon dispatchable generation all have important roles to play. Batteries are particularly valuable for short-duration flexibility and fast response. But if the supply-demand challenge lasts for many hours or several days, the system needs options that can sustain output for longer. The question is not whether gas competes with these solutions, but how it complements them during the transition.

Conclusion

Recent weather events have shown that the need for flexible, reliable capacity does not disappear as renewable deployment increases. In some respects, it becomes more important because the system becomes more exposed to weather patterns and intraday variation.

The policy challenge is to manage this transition holistically. Gas should not be presented as a reason to slow clean energy deployment, but neither should its system value be ignored before credible alternatives are available at scale. The price spike on the 26 June makes this point clearly.

While prices reached £468/MWh as the system tightened, modelling suggests they could have risen to more than £1,600/MWh if gas availability had been reduced. Gas did not create the scarcity; it helped contain it.

Gas is moving from being a high-volume fuel to a high-value source of flexibility. Recognising that shift will help ensure the energy transition is secure and affordable for consumers.

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