

What summer heatwaves reveal about Britain's energy security

by Jorge Pikunic, Chief Executive of VPI

Recent heatwaves have shown that security of supply is no longer just a winter issue. Four Electricity Margin Notices have been issued this summer, compared with none during winter 2025/6.

What does this tell us about the UK's power system, and how can we tackle challenges pragmatically?

1. Weather risk must be managed year-round, not just in winter

Heatwaves are often seen as a test of electricity demand in warmer markets. In Texas, for example, power consumption rises sharply as temperatures increase. Britain's experience this summer was different. Demand was only around 5% higher than last year and well below winter peaks: roughly 30GW versus more than 50GW in winter.

The pressure came from the supply side. First, high temperatures coincided with still weather and low wind, reducing renewable generation when power was needed most.

Second, in Europe, extreme temperatures constrained nuclear output as higher river temperatures limited reactor cooling.

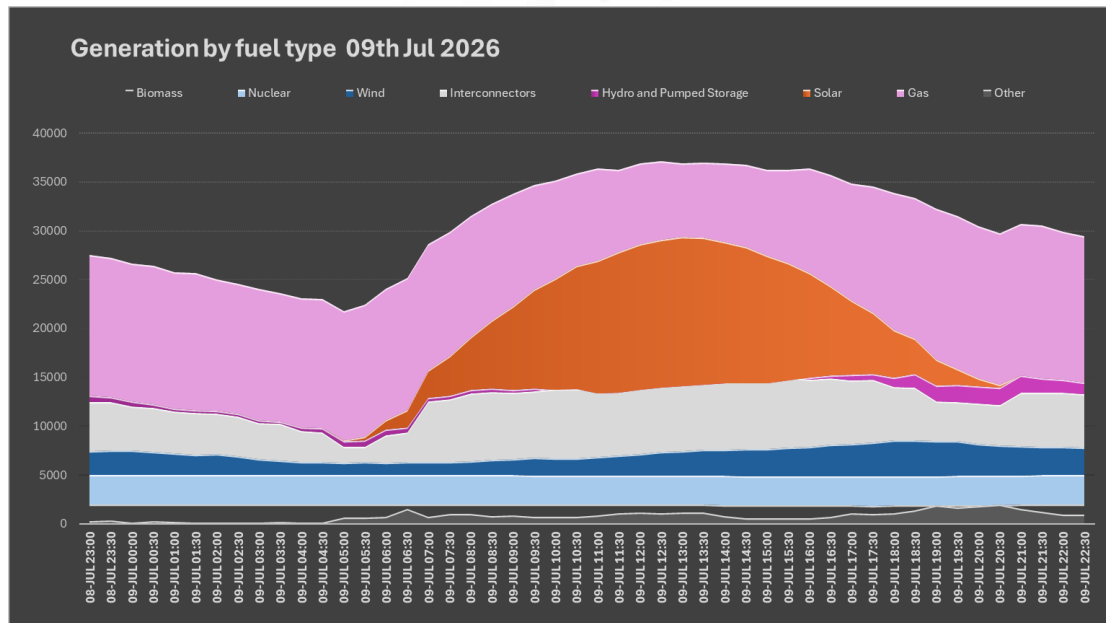
Third, summer is when some parts of the conventional fleet undertake essential maintenance work to ensure reliability in winter, as it is a time they have traditionally not been needed. As these system conditions become more common, we need to ensure we have the right levels of reliable capacity to have year-round security of supply.

At the same time, with more embedded renewables in the system, the power grid becomes more complex, and harder to forecast and operate. This means that the system operator needs more capacity and more measures available to them to deal with the unexpected.

2. Renewables and flexible power go hand in hand

Take 9 July. Solar generation made a significant contribution during the day. But the system still had to operate through the evening, overnight, and during a prolonged period of low wind.

Storage and demand-side response help in short time frames. However, they are not yet deployed at the scale or duration required to support extended periods of low renewable generation. That's why on 9 July, gas-fired generation supplied nearly 40% of Britain's electricity.



Sources: BMRS and NESO

Low-carbon alternatives such as long-duration storage will eventually fulfil more of this role, but they face some practical limitations currently, such as transmission constraints. Until then, gas-fired generation remains the UK's principal source of dispatchable capacity, because it can run for sustained periods.

As electricity demand grows, driven by new data centres, advanced manufacturing and electrification, access to reliable power will become a prerequisite for economic growth. While the direction of travel is clear, the scale of that growth remains uncertain. NESO's scenarios suggest electricity demand could be two to three times higher than today's demand by 2050. In a renewables-led system, sufficient flexible generation, storage, and demand response (including from flexibility in new demand) capable of responding over both short and long durations, are non-negotiable. They enable the power grid to balance increasingly variable supply against rising but uncertain demand.

3. Wholesale volatility does not automatically mean higher bills

Volatility is a feature of a power system with more weather-dependent generation. When supply is tight, wholesale prices rise. Those higher prices encourage additional generation, storage discharge and demand response, helping to balance the system.

Prices remain the clearest way to signal scarcity and reward availability. They allow operators to balance maintenance and investment decisions against system needs, helping to ensure capacity is available when it is most needed. Intervening in the market can blunt these signals.

Moreover, occasional wholesale price spikes do not automatically become higher bills. Over time, high-price periods are negated by periods of abundant renewable output, when wholesale prices are low or even negative. Much renewable generation also operates under Contracts for Difference, which largely insulate consumers from wholesale price movements by fixing the price that these generators receive.

Tariffs and schemes that reward consumers for shifting use away from peak periods give consumers the opportunity to respond to market signals and benefit from doing so.

4. Interconnectors are not a substitute for domestic capacity

European power market integration is often presented as a way of reducing risk and sharing resources across borders. In normal conditions, it can do that. The flaw is the assumption that surplus power will always be available somewhere when it is needed.

The late June heatwave illustrates this. As heat and low wind affected countries across the region, spare capacity became scarce almost everywhere. Contrary to what was needed in the UK, high prices across the continent signalled interconnectors to export electricity from Britain even as domestic margins tightened. Conversely, in early August, exports to Europe were restricted almost daily despite ample domestic generating capacity, preventing power from reaching markets where it was needed.

That is why most countries retain dispatchable capacity within their own borders, with many European governments procuring new gas-fired generation to support the transition away from coal whilst maintaining security of supply.

Britain's advantage is that much of the dispatchable capacity it will need already exists. Maintaining that capacity is often a more reliable (and affordable) route to security of supply than relying on imports during periods of system stress.

Over the past decade, policy has rightly focused on deploying renewable generation, and the progress has been significant. The next challenge is ensuring the wider power system can be relied on as it transforms, so that it can fuel economic growth. That means a comprehensive strategy for security of supply, backed by a market framework that attracts investment in the capacity and infrastructure needed when wind is low, when imports are constrained, and when demand rises. If this summer has revealed anything, it is that Britain needs not just more clean power, but more secure power too.