

Frequency Q&A

What is frequency and why is it important?

Frequency is a measure of how we manage the energy in and out of the electricity power system. The equipment in homes, business and industries is designed to operate at a certain frequency, which is 50hz.

Power generators in Great Britain are effectively connected together through the high voltage transmission system, spinning at 50hz, to form a single, stable electricity supply.

It's very important to keep the frequency of power supply stable, as devices are very sensitive to any change. It's therefore our role to make sure on a second-by-second that frequency is maintained within a certain set of limits.

How is frequency managed?

Any change or fluctuation in supply and demand can have a major effect on frequency. So if supply goes lower than demand, frequency drops, and if demand is lower than supply, it increases. Because of how sensitive electrical equipment is to frequency, there are strict guidelines in place for how we manage it. We abide by the statutory limits set by our regulator, Ofgem. The range we have to operate within is 49.5Hz to 50.5Hz.

What happens when you lose supply to the system? How do you maintain the frequency?

We calculate and hold generation in reserve to help us operate within the statutory limits. We have 'frequency response' services in place such as access to conventional power plants, and new technologies such as batteries and wind farms who can be there in the background, ready to maintain the frequency if we need them. The need for change in supply can happen very quickly, often less than a second, and therefore many of the services we hold work automatically, within an incredibly fast timeframe. Having these services in place means it's very rare and exceptional for us to fall outside of the limits. When we do, it's standard practice for us to submit a report to our regulator.

When has frequency dropped below statutory limits?

Frequency falling outside of statutory limits is a highly unusual event. Since 1998, there have been three recorded incidents, where the frequency has fallen below 49.5Hz, including the event on 9 August.

Has the mix of response providers changed over the years?

Yes, since 2017 we have worked to increase market competition and as a result have seen an increasing volume of our Frequency Response provided by smaller providers across various technologies including Demand Side Response, Energy Storage and Combined Heat & Power. We are technology agnostic as part of our assessment of frequency response tenders, to ensure a level playing field and to secure the most economical solution.

Has the volatility of frequency response increased in the last year?

As part of an annual report on the performance of the GB electricity network we provide an assessment of the volatility of frequency. As part of this report we produce a table setting out the weekly variation in frequency, there has been no material change to frequency deviation over the last year and a half.

What other unusual system events have we had compared to previous years?

NGESO has not experienced any unusual frequency excursion events in recent years. For clarity we have not seen any frequency excursions out of the statutory limits (49.5-50.5Hz) in the past 10 years apart from the last incident on 9 August.