# AI data centres strain the US electrical grid



As artificial intelligence continues to shape the future of business, the rapid proliferation of AI data centres in the United States is putting unprecedented strain on the national electrical grid. The increase in these facilities, essential for powering the digital economy, raises significant concerns regarding the quality and reliability of power supplies for everyday Americans.

Recent analysis by Bloomberg highlights the emergence of a phenomenon called "bad harmonics," which significantly contributes to power quality deterioration. Bad harmonics refer to distorted electricity waves that can negatively affect household appliances, leading to overheating or mechanical malfunctions. The potential ramifications include costly damage to electronics and a heightened risk of electrical fires due to fluctuations in voltage.

Data from Whisker Labs, which monitors power quality through approximately one million residential sensors, indicates a strong correlation between proximity to data centres and rising instances of bad harmonics. The analysis notes that more than half of the households experiencing the worst power quality distortions are located within 20 miles of major data centre operations. This statistic reveals that approximately 3.7 million Americans reside in highly impacted areas, raising concerns about their daily access to reliable power.

Experts have long warned of the impending challenges posed by data centres as demand for electricity soars, particularly driven by the AI boom. The International Energy Agency has projected that global energy demand from data centres will continue to grow, exacerbating issues surrounding energy prices and potential outages. Current trends suggest this situation is poised to worsen, as more facilities enter operation.

The findings underscore an evolving crisis in energy consumption, where the advent of new technologies adds stress to an already aging infrastructure. In Northern Virginia, for example, a region informally known as "data centre alley," power demands have surged as the area has seen a rising capacity of data centres. Loudoun County alone is forecasted to increase its data centre energy demands by 2% in 2024, pushing the total to around 3,000 megawatts.

As the demand for electricity is expected to increase by nearly 16% over the next five years, according to a report from Grid Strategies, industry leaders are pressing for substantial investments into grid upgrades to accommodate this rising need. Research indicates that historically, US power consumption levels have remained relatively flat, but the landscape is changing rapidly due to the digital transformation.

In response to the challenges presented by the increasing number of data centres, some solutions are already being implemented. New data centres in Virginia are required to establish their own substations and transformers to minimise disruption to local grids. Additionally, Dominion Energy is in the process of constructing a new transmission line into Loudoun County, which aims to improve overall power quality and reliability.

In an environment where technology is expanding at a breakneck pace, the interplay between AI advancements and energy infrastructure poses both challenges and opportunities for the future. It remains critical for stakeholders, including utility companies and government entities, to address these evolving issues to ensure that electrical power remains stable and reliable for American households.

Source: [Noah Wire Services](https://www.noahwire.com)

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