

AI, Grid Reliability and Cost Driving Increased Demand for Microgrids

Summary: The prevalence of extreme weather events disconnecting businesses from the grid is leading some to seek alternatives such as distributed energy solutions

- Weather events and thirsty AI are driving microgrid demand
 - Microgrids are typically greener and cheaper
 - Challenges include an exodus of grid users raising costs for the masses, causing societal impacts
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Increased power usage, reliability concerns and rising costs are driving demand for microgrids, according to the CEO of a distributed energy company, speaking at Nomura Greentech's Sustainable Leaders Summit.

The global microgrids market is estimated to reach \$60.7bn by 2027 from \$28.9bn two years ago, according to GlobalData, while the US microgrid market was valued at \$8.3bn for the year and is projected to grow nearly 16% annually until 2027.

“It’s an innovation similar to what happened in solar 20 years ago, converting microgrids to the masses,” the CEO said at the Summit, held under the Chatham House Rule.

He explained that three key problems are driving people to adopt distributed energy: 1. unprecedented load growth; 2. increasing unreliability in the grid and 3. constantly rising costs.

He said that AI is the biggest driver of increased power demand, with some of his clients requiring large volumes of extra energy to service their computational systems.

Grid reliability is becoming a frequent issue due to the prevalence of adverse weather incidents with historical grid outages rising 20-fold to their highest ever levels compared to 2002, he said. He gave the example of public safety power shutoff events in California where the utility cuts off power to customers for a day up to a week due to climate disasters such as wildfires, and sometimes this happens multiple times through the year.

“In some ways, because of extreme weather, the days of on-demand power is almost disappearing.”

The third factor is rising costs with the national average for utility rates in commercial and industrial electricity having risen by about 25% since 2020, he said.

Microgrids help address these risks and have driven a material uptick over the last five years as they are cheaper, cleaner and more reliable, he said.

The CEO cited concrete use cases for microgrids including a recent customer with a lengthy interconnection process challenge. The client, a provider of last mile freight, was doing an EV conversion for its fleet of 30 electric trucks but when they needed more energy to power the fleet, the utility offered to fulfil the request in four years. The CEO's company was able to deliver it in about 14 months using 1.4 megawatts (MW) of rooftop, 3 MW of batteries and 1.5 MW of backup power. The solution provided an emissions reduction and a 20% cost saving relative to the utility.

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The CEO explained that he can do this by tying customers into a longer term 20-year contract that's similar to power purchase agreements in the solar space.

He cites a second example of a customer building a new production facility in a field with a similar interconnection problem to the grid, this time the utility indicated a five year wait and a cost of \$10 million.

“The customer wanted to build a completely off grid system. Historically, this hasn't happened very often but it's happening more and more.”

The CEO explained that being completely off grid involves a different system design in order to provide 100% of their power needs. This means creating additional redundancy, which consisted of 2.4 MW of solar, 4.8 MW of gas and 4 to 5 MW of natural gas.

And he said that it isn't just rural companies that ask for an off-grid solution. One of his earliest customers was a client in Brooklyn that has been fully off grid for 20 years.

In his last example, the CEO explained the huge growth in demand from data centers as efficiency gains over the last decade have plateaued and are now dropping. At the same time, AI systems are thirsty for energy and typically can't get extra power for several years due to transmission and substation upgrades.

In terms of green credentials, the CEO said that the vast majority of his assets with dispatchable generation will run less than 50 hours a year on gas with the rest of the output made up of renewables. For comparison, data from the US Department of Energy shows that renewables generate about 20% of all US electricity.

But the outlook isn't all rosy as the CEO raised the thorny issue of utilities reacting to being disintermediated.

He explained that the reason for bringing businesses off grid is to address the problem of the utility not being able to provide them with enough power so on the one hand the utility should be grateful. But on the flipside, which is more common, is the concept of the 'utility test file' where the greater the exodus off grid while the utility's fixed costs remain the same; the higher the electricity prices for remaining customers as the utility's costs are spread across a smaller number of people.

“There's a risk that because of the social dimension, effectively all those who remain connected to the grid have to pay a higher cost, raising the prospect that at some point microgrids need to participate in the socialization of the transmission.”

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