Transnistria commercial microgrids

Transnistria commercial microgrids

Rapidly increasing energy consumption due to data centers, EVs and AI, requires adopting innovative energy strategies like distributed energy resources and microgrids that offer viable solutions for a more resilient, responsive energy infrastructure.

A microgrid integrates on-site generation, such as Mainspring"s Linear Generator and solar PV, with energy storage, electrical distribution, apps, analytics, and software for commercial and industrial facilities.

The U.S. energy grid is under unprecedented strain, driven by surging demand from data centers supporting artificial intelligence (AI) and the rapid adoption of electrification and electric vehicles (EVs). As these two sectors expand, their combined power needs are propelling the nation"s energy consumption to new highs, forcing the grid to adapt to sustain modern technological and environmental ambitions.

The transformation of energy infrastructure is particularly urgent in places like "data center alley" in Virginia, where power demands are peaking. Data centers--the lifeblood of AI and cloud computing--are clustered in such areas, pushing grid capacity to its limits. Meanwhile, the surge in EVs is exerting similar pressures on local grids, as the demand for EV charging infrastructure explodes, especially in high-density regions like Los Angeles and the Bay Area.

This dual pressure from AI and EVs doesn"t merely reflect a need for more energy; it also complicates the logistics of power distribution, especially as utilities aim to reduce carbon emissions and bolster grid security. Extreme weather events and climate impacts have further underscored the necessity of a resilient grid capable of handling both expected and sudden demands. The grid"s evolution, however, doesn"t stop at adding capacity, it requires an agile, distributed model that supports local power generation and rapid response to demand fluctuations.

Microgrids are designed to provide three main benefits: ensuring energy resilience, enhancing cost predictability, and integrating clean energy resources. For example, JFK Airport"s smart grid--incorporating solar power and on-site battery storage--provides energy backup during disruptions, demonstrating how critical infrastructure can maintain operations even when the central grid falters. Such models underscore the value of microgrids as a solution for facilities and communities aiming to fortify themselves against outages and grid instability.

The deployment of microgrids is also a compelling economic opportunity. By generating and storing energy locally, organizations and communities gain control over energy costs, reduce reliance on external power, and can even sell surplus power back to the main grid. For facilities managing high-demand operations, such as data centers, these capabilities add reliability while also supporting sustainability by using renewable power.

Transnistria commercial microgrids

The grid of the future will likely be a decentralized network of microgrids and DERs, which can dynamically manage power loads, optimize renewable energy use, and reduce reliance on fossil fuels. This transformation can create an adaptable system that not only meets the energy demands of data centers and EV infrastructure but does so sustainably and efficiently. Decentralizing power generation--by empowering communities and facilities to produce and manage their own energy--will also support national goals for decarbonization, economic growth, and energy security.

The journey to a sustainable, resilient energy infrastructure is both a necessity and an opportunity. By leveraging microgrids and other DERs, the U.S. can build a grid that isn"t just stronger but also smarter and able to meet the dynamic demands of an AI-powered, electrified future. This energy transition, though challenging, represents a pivotal moment to redefine what the grid can be, ensuring it supports innovation, withstands the pressures of climate change, and propels us into a clean energy era that is as resilient as it is efficient.

Jana Gerber is microgrid president, North American region for Schneider Electric. She is responsible for growing the commercial microgrid business in North America and supporting customers in their sustainability and resilience journeys.

Rohan Kelkar is the executive vice president of Schneider Electric’s Power Products global business. With more than two decades of experience leading multinational corporations, Rohan leads the division"s electrical distribution portfolio responsible for championing innovative solutions and delivering more sustainable, efficient, connected, and circular products to the market.