News : Surging electricity demand challenges US utilities; CEOs turning to generation, wires

By Markham Watson
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- Data centers boost projections
- Gas-fired generation still needed

After decades of slow load growth, surging power demand from electrification of the US economy in a context of increased technical and environmental pressures poses multiple challenges for power markets and utilities, executives said April 16.

Some of the executives, speaking at the S&P Global Commodity Insights Global Power Markets event in Las Vegas, suggested ways of meeting those challenges include improved and expanded generation and transmission technology.

From about 1990 to about 2007, load growth in the Lower 48 states averaged about 2% a year, said Douglas Giuffre, senior director for North American power markets analysis at S&P Global Commodity Insights, but in the wake of the Great Recession, load growth slowed to about 0.2% a year, as energy efficiency efforts bore fruit.

Combining utility projections with consultants employed by regional transmission organizations, "they had consistent load forecasts that over-projected," Giuffre said.

The North American Electric Reliability Corporation noticed this and revised its projected load growth percentages downward to about 0.5% in 2022, but more than doubled that projection in 2023 to about 1.2%, partly because of surging demand from data centers, Giuffre said.

"For many parts of the country, this is a dramatic shift from where load growth had been to now what's expected to come," Giuffre said. "And this is going to require a lot of utilities and RTOs to kind of wrestle with this question: How do you manage to meet this potentially rapidly growing demand that we just haven't seen? ... What has changed, clearly, is the sudden discussion of data centers."

Data centers currently consume about 185 TWh a year, "the equivalent to all the residential electricity consumption in Florida and New York today." Across the various RTOs, data center load is projected to add about 250 TWh, "the equivalent of adding Texas and California residential load," Giuffre said.

'An uptick in gas'

Such surging demand cannot reliably be served, at least in the short term, without adding natural gas-fired generation, Giuffre said.

"Natural gas had been obviously for quite some time a leading resource in the market, but we're likely to be at a 25-year low in terms of new gas additions this year," Giuffre said. However, S&P Global researched the integrated resource plans of several utilities, and "what we're seeing is an uptick in gas either to replace existing coal-fired generation or as peaking capacity to support renewables."

Vincent Sorgi, president and CEO of PPL, the Allentown, Pennsylvania-based utility holding company, said, "The key to the clean energy transition and getting renewables deployed at scale is natural gas."

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“Batteries right now are significantly more expensive than building new natural gas, and the new natural gas units are incredibly efficient,” Sorgi said during a “fireside chat” with Xizhou Zhou, vice president of the Gas, Power and Climate Solutions group at S&P Global.

“I think, in general, politicians understand the value of natural gas so they seem to be a lot more amenable” to allowing its growth, Sorgi said, particularly if it is combined with carbon capture and sequestration or alternative fuels such as renewable natural gas or hydrogen.

“So, I think you’ll continue to see that in integrated utilities … for more fossil generation,” Sorgi said.

Cindy Crane, CEO of PacifiCorp, the Portland, Oregon-based utility holding company, said her company has proposed gas-fired generation to some utility regulators “under the condition that they’re capable to convert to hydrogen.”

“We are saying that those are needed to bring that reliability for a longer term in our system,” Crane said.

PacifiCorp is also pursuing nuclear power development in the form of a 385-MW small modular reactor pilot project with Bill Gates’ TerraPower, with groundbreaking schedule for June 10 in Caspar, Wyoming, Crane said.

Transmission expansion

PacifiCorp has also embarked on a 20-year transmission expansion plan involving 345 kV and 500 kV lines estimated to cost about $12 billion, with to of the larger segments resulting in a high-voltage network of more than 1,100 miles of line.

“Then, we have several hundred miles more that are scheduled to be coming online between 2025 and 2028,” Crane said.

Doug Cannon, president and CEO of NV Energy, which serves significant load centers in Las Vegas, Reno and Carson City, said his company is building more than high-voltage lines along the state’s western border to Reno, east across the middle of the state to Ely and then south to link up with NV Energy’s existing grid.

“What you're going to see if you picture Nevada, there's going to be a giant 500-kV triangle that goes around the entire state that is going to improve reliability for our customers [and] dispatch our system in a more efficient way, dropping energy costs for customers,” Cannon said. “It's also going to open up a lot of area that previously could not be developed for renewable energy. There's tremendous solar potential along the west side of the state of Nevada, where there was no transmission. In addition, in the center part of the state, there's more solar potential, as well as improve the geothermal potential.”

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