

I have had the privilege of sitting on the planning committee for this great conference for several years now. TechCon is one little Gem of a conference that provides some of the best learning for practitioners in the power industry. I also had the privilege of visiting with and recording interviews with thought leaders from many different occupations, but all with one thing in common: A love and passion for what they do every day. I hope you enjoy this compilation of thoughts from great minds.

Alan Ross

Managing Editor, APC Media



Current State of the Power Industry

We all agreed that the power industry is currently undergoing a period of significant and rapid transformation, driven by several key factors. One of the most prominent is unprecedented load growth, due to the rise of data centers and the onshoring of manufacturing. Wayne Bishop, of Quanta Technology explains this shift: *“Oftentimes today you hear the word energy transition. I like to say it is not an energy transition, but an energy transformation because it is that radical of a thing that is happening. We have had more changes in our industry in*

the last 10 years than we have had in the last 100 years.”

Daniel Diaz of Southern Company highlights the scale of this growth, stating: *“There used to be areas and pockets of the US where we had negative load growth. And now we are talking about 5, 6, 7, and even 8%.”* This surge is putting immense pressure on existing infrastructure, from generation to transmission and finally to distribution. Clearly, this will not be our grandfather's grid when all is said and done. A great deal of the load growth of course is from the rapid rise of data centers and particularly those data centers associated with the phenomenon of AI. When we use our cell phone to ask Google a question, it takes X amount of energy. When we ask Chat GPT or any other AI, it takes as much as 1000X amount of energy and AI is still in its infancy for searches.



A great deal of the load growth of course is from the rapid rise of data centers and particularly those data centers associated with the phenomenon of AI.

Another major challenge is, of course, aging infrastructure. Christina Park from Skydio points out: *“All of our infrastructure was built at a time that it was just not meant to take the loads and the weather conditions and things that are happening today.”* As a result, reliability is becoming a key concern. And when it was built it was built for the typical large generation facility and sent down the grid to homes and businesses, a basic “step down” system. Renewables, EV Charging, Storage and all the other incredible, fast-moving changes that are taking place, as Wayne suggested above, were not part of equation.

Which also leads to the current demand for resilience, not just reliability. Weather events, fires and physical security threats create the need for resiliency, designed into the system. Reliability is making sure we keep the lights on. Resilience is getting them back on after an event. Resiliency calls for redundancy, flexibility, and advanced analytics to ensure that we react as quickly and as safely as possible.

The industry also faces supply chain constraints for critical equipment like transformers and breakers. Daniel Diaz adds: *“We are hearing from equipment specialist that it is taking—not*

weeks, not months—but maybe years to get big equipment such as transformers and breakers.”

Workforce challenges further compound these issues, with many experienced professionals retiring and difficulties in attracting and training new talent. Kevin Riley of TranTech underscores this shift: *“Over our decades of service in this industry, we have seen so many retirements, but then another generation of people that come in that may not know nearly as much as the person that just retired.”*

The transition brings its own challenges, particularly the variability of renewable sources like wind and solar. Mark Lauby from NERC explains: *“When you do not have decent models, you do not study them right... We had outage excursions—three or four of them within about 55, 60 seconds. The UPS was saying, ‘Okay, I got that. I got that.’ But then the cooling load was watching what was going on. The UPS said, ‘I’m getting out of here, and so that shed that load.”* Cooling of data centers requires a great deal of power and



Reliability is making sure we keep the lights on. Resilience is getting them back on after an event.

Policy uncertainty is another major headwind. As Robert Vary of Reinhausen (known as MR) stresses - the legislative engagement is critical: *“It takes so long to get things built, and if we do not meet growing energy demands, it could have national security implications.”*

AI data centers are even more cooling hungry.

There is growing recognition of the interdependencies between the electric grid and other critical infrastructure sectors—such as natural gas, communications, and water—which adds another layer of complexity to ensuring reliable power.

Looking ahead, the power industry is expected to continue its rapid transformation. Load growth driven by data centers, AI, and electrification is projected to persist and accelerate.



Mark McVey of Dominion Energy warns: *“The data center started out at 50 MVA blocks. Now they are at 200 or 250 MVA. I have three one-gigawatt data centres sites going into an area near South Boston, VA. A typical nuclear site is about two gigawatts—so you are going to blow through that pretty quick.”*

Grid modernization will be essential to accommodate this growth and the evolving generation mix. This means not just transitioning but truly transforming the grid through innovative technologies and strategies.



Grid modernization will be essential to accommodate this growth and the evolving generation mix. This means not just transitioning but truly transforming the grid through innovative technologies and strategies.

Renewable energy sources will play an increasingly significant role in future generation portfolios. But to ensure grid stability, dispatch-

able sources—such as natural gas and nuclear power—will remain crucial. This includes the emerging potential of small modular reactors (SMRs). Rachel Williams from Southern Company says nuclear is *“definitely one of the arrows in the quiver”*. Battery storage will also be vital to manage the intermittency of renewables.

Microgrids are emerging as a potential solution for large energy consumers like data centers and industrial facilities, while also enhancing overall grid resilience.

Automation and innovative technologies, such as drones for inspections, will become more widespread as utilities push for greater efficiency and better asset management. Christina Park from Skydio calls them *“workforce multipliers”*. The industry is expected to move toward condition-based maintenance, using data and analytics to optimize maintenance schedules and asset lifecycles.

Collaboration and knowledge sharing will be increasingly important in navigating the complexities of the energy transformation.

Wayne Bishop of Quawnta Technology emphasizes this: *“Teamwork is wanting and helping your colleagues to succeed. So, we will take a team of folks at Quanta Technology and then get together with a utility and present a research project, for example, at a conference.”* Conferences like TechCon are highlighted as key venues for these exchanges.

Lastly, there's growing awareness of the need for coherent energy policy—one that provides certainty and enables investments in infrastructure and emerging technologies. The focus on resilience will also intensify, as the grid faces increasingly diverse threats, including extreme weather and cyberattacks. Mark McVey highlights a shift in approach, referencing *“the development of mobile substations”* as a proactive solution to rapidly restore service. Creating a Mobile Substation fleet with enough flexibility to meet many needs in the field, is becoming a necessity, not a luxury.



Final Thoughts

TechCon is a conference where great presentations and panels are made even greater by the networking and interactive sessions. Industry practitioners, like those we have quoted and so many more we will feature in our future updates, connected with key suppliers and peers to exchange their insights. We strongly urge utilities, as well as renewable developers, operators and suppliers to consider TechCon 2026, supported by Luma Energy, the electric utility for the island of Puerto Rico. Learning from the challenges and accomplishments Luma has experienced offers a compelling example of operational resilience and innovation in action. <http://TechCon.info>.