

The Power Struggle: Examining the Reliability and Security of America’s Electrical Grid

House Oversight Committee, Subcommittee on Economic Growth, Energy Policy, and Regulatory Affairs

Testimony of Jonathon E. Monken, March 12, 2024

Chairman Fallon, Ranking Member Bush and distinguished members of the committee, thank you for the opportunity to speak with you today on the vital subject of our nation’s electricity grid. My name is Jonathon Monken and I am a Principal at Converge Strategies, LLC (“Converge”), where I advise clients in Federal and State Government, as well as the private sector, on the development and implementation of strategies designed to improve the energy resilience of critical infrastructure systems with an emphasis on the U.S. Department of Defense. Often referred to as the world’s largest machine, the North American grid is a vast network of assets designed to deliver electricity to all its customers in a safe, efficient, and reliable manner. Today’s hearing is timely for two reasons: the grid is undergoing an unprecedented transition related to the ways we generate and use electricity, and the reliable delivery of service to customers is under threat by natural and manmade risks that demand our collective attention. The issue of grid resilience must be understood as an issue of national security. Just as we would not leave the defense of our country to chance, the energy system that underpins our collective economic and reliability needs must be supported through targeted planning, investment, and policy. In my testimony I will provide context to both issues and highlight the importance of grid planning and oversight to address the risks they represent.

The grid transition is driven by two primary factors including unprecedented increases in customer demand, known as “load growth,” and the transition to Carbon Free Energy (CFE) sources of electricity generation. The federal government plays an essential role in developing policy, supporting technical standards, and collaborating with the private sector to ensure the grid is prepared to meet the energy needs of all citizens. Over the past year, grid planners nearly doubled their 5-year load growth forecasts, with the nationwide demand for electricity expected to rise sharply from 2.6% to 4.7% over the next five years, as outlined in 2023 FERC filings. This increased consumption is a reflection of more than \$630 billion in private sector investment in new manufacturing, industrial, and data center facilities.¹ Meeting this demand is essential to domestic economic growth, and requires deliberate action to deploy and sustain energy resources. Across all grid regions of the U.S., 2 terrawatts (TWs) of new generation, more than 94% of which are renewables and battery storage, are queued up to meet this demand.² Large-scale wind and solar power plants are competitive with existing conventional generation, and offer cheaper power than fossil fuel facilities.³ A recent analysis found that 99% of U.S. coal plants are now more expensive to run than new solar, wind, and batteries.⁴ The rapid deployment of new resources must be matched with a corresponding investment in electric transmission infrastructure to ensure these

¹ [The Era of Flat Power Demand is Over. John D. Wilson and Zach Zimmerman, December 2023](#)

² [US Interconnection Queues Analysis, 2023. Tony Lenoir, S&P Global, August 2023.](#)

³ [Lazard’s Levelized Cost of Energy Analysis - Version 16.0](#)

⁴ [The Coal Cost Crossover 3.0](#)

generation assets are connected to the growing demand in all regions of the country. The U.S. Department of Energy (DOE) estimates that the transmission system will need to expand 60% by 2030 to maintain reliable electric service, and that transmission investment may need to triple by 2050.⁵

This transition is occurring at a time when the grid is under threat from climate-driven changes in severe weather patterns, as well as targeted attacks on grid infrastructure from homegrown violent extremists (HVEs) conducting physical attacks and foreign adversaries utilizing cyber capabilities. There were 1,665 physical and cyber security incidents involving the U.S. and Canadian power grids in 2022, including 60 incidents that led to outages, representing a 71 percent increase over 2021.⁶ FBI Director Christopher Wray recently testified to Congress that, “China’s hackers are positioning on American infrastructure in preparation to wreak havoc and cause real world harm to American citizens and communities if and when China decides the time is right to strike.”⁷ Exacerbating these security risks is the trend of increasingly frequent and severe weather events impacting the grid across the country.

These risks highlight the importance of actively managing and assessing the balance and diversity of resources supplying the grid to avoid worst-case outcomes during adverse operating conditions. Recent Winter Storms Uri and Elliott highlighted the risks associated with the heavy dependence of a grid service territory on generators of a single fuel type within a limited geography. While generation of all types experienced outages due to the cold weather and operating conditions, the outages were far more pronounced with natural gas generators. In the case of Winter Storm Uri, “from February 8 through February 20, 2021, of the 1,293 unplanned generating unit outages, derates, and failures to start that were due to fuel issues, 1,121 (87 percent) were due to natural gas fuel supply issues,”⁸ which resulted in up to 4.5 million people losing power for as long as 4 days.⁹ Winter Storm Elliott saw a similar outcome, where 63% of all generation outages (by MW) were from natural gas fired plants.¹⁰ More comprehensive evaluations of fuel security are needed to identify the optimal mixture of generation types to reduce the risk of disruptions caused by fuel availability.¹¹ This should include transmission planning to prioritize connecting regions with a greater diversity of generation types to those regions with a high dependency on single fuels that could suffer from common-mode failures. Expanded interregional transmission would help alleviate reliability issues associated with, for example, forced outage rates of generation that far exceeded grid operator planning criteria during recent cold weather events. Thank you again for the opportunity to discuss this important matter with the committee, I look forward to your questions.

⁵ U.S. Department of Energy Office of Policy. (2022). [Queued Up... But in Need of Transmission](#).

⁶ [Extremists keep trying to trigger mass blackouts — and that’s not even the scariest part, Politico, September 10th, 2023.](#)

⁷ [Testimony to the House Select Committee on the Chinese Communist Party, January 31st, 2024.](#)

⁸ North American Electric Reliability Council. (2023). February 2021 Cold Weather Grid Operations: Preliminary Findings and Recommendations. FERC-NERC-Regional Entity Joint Inquiry Into Winter Storm Elliott

⁹ [FERC/NERC Release Final Report on Winter Storm Uri](#)

¹⁰ North American Electric Reliability Council. (2023). [December 2022 Winter Storm Elliott Grid Operations: Key Findings and Recommendations](#). FERC-NERC-Regional Entity Joint Inquiry Into Winter Storm Elliott

¹¹ See PJM. (2018) [Fuel Security Analyzing Fuel Supply Resilience in the PJM Region: Summary of Results, Conclusions and Next Steps.](#)