POWERLINE NEWS

Grid Reliability Challenges and Coal's Role in the Mid-Atlantic Energy Mix

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Amid growing concerns over national grid stability, recent data from Goldman Sachs indicates that 9 of the 13 U.S. regional transmission organizations (RTOs) are operating with critically low reserve margins. This poses a significant risk of load shedding and price volatility during peak demand periods. The Mid-Atlantic region—serving approximately 6.5 million residents—is among the most affected, with Maryland utilities increasingly reliant on high-cost imported electricity to meet demand.

FirstEnergy's Integrated Resource Strategy

In response to these reliability concerns, FirstEnergy Corporation has submitted an Integrated Resource Plan (IRP) to West Virginia regulators. The IRP outlines a dual-generation strategy:

- Construction of a 1,200 MW natural gas-fired power plant
- Continued operation of two coal-fired facilities—Fort Martin (Maidsville) and Harrison Power Station (Haywood)—through at least 2035

In addition to investing in a new power plant, First Energy has spent $1B USD on upgrading its environmental compliance systems at its coal plants. These assets are critical to maintaining grid stability across West Virginia and neighboring states, including Maryland. FirstEnergy has also been procuring supplemental power from external sources to mitigate shortfalls.

State-Level Generation Expansion

West Virginia Governor Patrick Morrisey has proposed a 50% increase in statewide generation capacity, driven largely by the exponential growth of hyperscale data centers. This initiative aligns with FirstEnergy's IRP and supports regional load balancing.

Currently, West Virginia operates 10 coal-fired power plants, which collectively supply approximately 80% of the state's electricity. The Harrison Power Station, commissioned in the 1970s, has undergone over $1 billion in environmental control upgrades to comply with evolving emissions standards.

Environmental Compliance and Wastewater Treatment Innovation

As part of its environmental stewardship, FirstEnergy has partnered with the Electric Power Research Institute (EPRI) to evaluate advanced wastewater treatment technologies for Flue Gas Desulfurization (FGD)

systems. Specifically, the company piloted the Vibratory Shear Enhanced Process (VSEP) reverse osmosis membrane system to treat FGD effluent containing regulated contaminants such as arsenic, mercury, and selenium.

Key outcomes from the EPRI-led pilot:

- 80% recovery rate of treated water meeting EPA discharge standards
- 20% brine reject managed via evaporation and encapsulation to prevent environmental release

This approach demonstrates a scalable pathway for coal-fired plants to meet evolving stringent effluent limitation guidelines under the Clean Water Act.

Conclusion

FirstEnergy's IRP reflects a pragmatic balance between reliability, cost, and environmental compliance. While coal remains a cornerstone of the Mid-Atlantic energy mix, the integration of natural gas and advanced treatment technologies signals a transition toward more resilient and sustainable grid operations.

New Logic Research has been a trusted provider of water treatment solutions for the power industry since 1987. To explore how VSEP technology can support cleaner coal operations: VSEP FGD Effluent System. To speak directly with an experienced VSEP engineer: info@vsep.com