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**PJM STUDY: SYSTEM RELIABLE EVEN WITH MUCH MORE GAS, RENEWABLES;
RESILIENCE KEY TO OPERATIONAL RELIABILITY**

Report Addresses Stakeholder Questions about Fuel Diversity's Effects on Reliability

(Valley Forge, Pa. – March 30, 2017) – The PJM Interconnection system can remain reliable with the addition of more natural gas and renewable resources, an analysis released today concludes. However, the report notes that an increased reliance on any one generation type brings resilience risks not accounted for under traditional reliability standards.

The report, "[PJM's Evolving Resource Mix and System Reliability](#)," responded to questions about the effects of fuel diversity on reliability. PJM stakeholders had questioned whether the system is losing too many traditional resources as coal plants retire and nuclear owners consider their future.

"This analysis underscores our responsibility to continue to operate the system reliably, and explore the role of resilience, the ability to tolerate unforeseen shocks and continue to deliver electricity," said PJM CEO Andy Ott. "Different resources provide different reliability attributes, though new technology or regulations have the ability to improve those capabilities.

"PJM needs to work with stakeholders and the industry to determine whether markets and operation structures need to shift to make sure that necessary levels of generator reliability characteristics are maintained in future resource mixes."

The report analyzed the availability of generator reliability attributes essential to the grid under potential resource portfolios. Those qualities include frequency response, voltage control, ramp, fuel assurance, flexibility, black start, environmental restrictions and equivalent availability.

"We found that the risk to the system wasn't that resources couldn't necessarily provide reliability attributes but that the potential concentration of a single fuel source or low-probability, high-impact events could cause significant impacts to the system," said Michael Bryson, vice president – Operations, who led the study.

PJM created a "composite reliability index" to assess the operational reliability of various resources across four states: normal peak conditions, light load, extremely hot weather and extremely cold weather.

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“The study concluded that our current portfolio is both reliable and diverse,” Bryson said.

The study found that a more diverse fuel portfolio isn’t necessarily more reliable. Certain resource blends that fall between the least and most diverse offer the greatest number of key generator reliability attributes. An adequate level of diversity fosters flexibility and adaptability in mitigating risks associated with equipment failure, fuel price volatility, supply disruptions, extreme weather and other unforeseen system shocks.

PJM’s current resource profile includes natural gas, coal, nuclear, renewables, demand response and other generation types. The analysis identified no limit to the amount of natural gas-fired generation that could be added to the system before it affected reliability; however, highlighted the potential increased dependency on fuel infrastructure and the need for PJM to further explore grid resilience.

The report did not address the economics of resource types, factors that might impact a fuel’s deliverability or public policy issues such as environmental impact, including the use of subsidies.

The topic will be the focus of the upcoming [Grid 20/20: Focus on Resilience \(Fuel Mix Diversity & Security\)](#), to be held April 19.

[PJM Interconnection](#), founded in 1927, ensures the reliability of the high-voltage electric power system serving 65 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region’s transmission grid, which includes over 82,000 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion. PJM’s regional grid and market operations produce annual savings of \$2.8 billion to \$3.1 billion. For the latest news about PJM, visit PJM Inside Lines at insidelines.pjm.com.

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