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**PJM Completes Fuel Security Study as Part of Resilience Initiative**  
*Results Confirm Grid Reliability, Identify Stress Points to Address Through Competitive Markets*

(Valley Forge, Pa. – Nov. 1, 2018) As part of PJM Interconnection's ongoing initiative to assess the resilience of the electrical grid, today the nation's largest grid operator released a summary of its study examining one critical element of grid resilience – fuel supply.

PJM's [fuel security analysis results](#) found that the system serving 65 million people in 13 states and the District of Columbia is reliable and can withstand extended periods of highly stressed conditions.

"The findings underscore that PJM is reliable today. But in this study we are also looking into the future, to stress-test our system to reveal future vulnerabilities and make sure we are resilient under many different conditions," said Andrew L. Ott, president and CEO of PJM.

The study was designed to test the grid's limits to endure high-impact, long-term disruptions to generators' fuel supply. The study also identified scenarios in which the system would face power outages, applying extreme, but reasonably plausible assumptions for weather, customer demand, generator retirements and fuel availability.

"These results indicate that assessing generator fuel security should be a priority for PJM and its members," Ott said. "We will continue to look for opportunities to address resilience through the competitive wholesale electricity markets, in this case, by valuing resources that have secure fuel supplies."

PJM's analysis stressed the system using more than 300 different scenarios that could occur from 2023 into the future. Testing conditions ranged from typical winter operations to extreme, but reasonably plausible scenarios. The analysis found that in a sustained period of cold weather with typical customer demand, PJM's system can operate reliably over an extended period of stress.

As with any stress test, the analysis was intended to identify tipping points at which stressed conditions begin to impact the PJM system. By subjecting the system to a series of extreme, but plausible scenarios, PJM found stress points, starting in 2023, which could result in material levels of generation unavailability and load shedding.

"We found that in extreme scenarios, the more the grid was stressed, the more important fuel supply characteristics, location of the fuel supply disruption and demand response became," said Michael Bryson, vice president of operations. "We believe that some changes to the system in the future – both market-based and operational – are warranted. As with any stress test, there are extreme cases, and building to mitigate or eliminate risk must be balanced with costs."

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Contact: PJM News, at [PJMNews@pjm.com](mailto:PJMNews@pjm.com)  
or toll free at 866-PJM-NEWS (866-756-6397)

## PJM Completes Fuel Security Study as Part of Resilience Initiative / Page 2 of 2

The study identifies key variables to the security of the grid's fuel supply. They include:

- Availability of non-firm gas service
- Ability of the fuel-oil delivery system to replenish oil supplies during an extended period of extreme cold weather
- Physical breaks at key locations on the pipeline system
- Customer demand (load)
- Generator retirements, replacements and resulting installed reserve margin
- Use of operating procedures to conserve fuel during peak winter conditions

Resilience is how grid operators manage the risk of high-impact disruptions that go beyond what is examined today under existing standards. These disruptions can happen simultaneously and persist for a long period. Operators must prepare for, be capable of operating through and be able to recover from these events as quickly as possible, no matter what the cause. PJM's resilience initiatives range from protecting the grid against coordinated physical or cyberattacks to ensuring the availability of system restoration resources that can respond after a major event.

In PJM's March 2017 paper, ["PJM's Evolving Resource Mix and System Reliability,"](#) PJM recognized that important resilience questions have been raised by the shift in fuel mix and technology types. The Fuel Security Analysis addresses those questions pertaining to the fuel supply chain.

PJM will work with its stakeholders, starting this month, to examine these findings and explore market-based solutions to address concerns about the long-term security of the fuel supply. PJM expects to have a problem statement presented to stakeholders in early 2019, with any potential market rule changes targeted for filing with FERC in early 2020.

PJM also urges national consideration of fuel security issues through the resilience docket opened by FERC, as the issues raised by PJM are not necessarily limited to the PJM region. "Policy guidance from FERC would certainly help the process," Ott said.

PJM will continue to work with the gas pipeline industry to improve coordination in communications, refine contingencies and further improve shared understanding of pipeline and grid operations and how they interface. PJM will also collaborate with the fuel-oil and fuel-oil-transportation industries to increase transparency of on-site fuel inventory levels in addition to replenishment rates and capabilities.

*[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 84,042 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](http://insidelines.pjm.com).*