



The increasing role of natural gas as a fuel for electricity generation has raised concerns about electric grid reliability if the fuel is not available for generating plants. PJM Interconnection and other grid operators, along with the gas industry and regulatory agencies, are carefully examining the gas/electric interface to identify issues and develop solutions.

Natural gas quickly is becoming a dominant fuel in PJM. The reasons include the increased availability of gas from nearby shale gas resources and the retirement of coal-fired generation as a result of changing economics and new environmental regulations. Retiring coal generation is being replaced, in part, by new gas-fired capacity.

From 2007 to 2011, shale gas production in the U.S. increased by more than 400 percent, according to the U.S. Energy Information Administration. Two of the largest shale reserves, Marcellus and Utica, are located in the PJM region. This increased gas availability has driven down prices and made gas increasingly competitive with coal for power generation.

The gas infrastructure in the PJM footprint includes seven major interstate gas pipelines and 32 natural gas distribution companies. As of April 2016, this infrastructure serves more than 400 gas-fired units in the PJM footprint.

Some of the differences between the industries and commodities include:

- **The speed of travel.** Electricity travels at the speed of light while gas moves 23 mph.
- **Alignment of industry days.** The gas day goes from 10 a.m. to 10 a.m. eastern while the electric day goes from midnight to midnight eastern.
- **Granularity of settlements.** The electric markets currently settle hourly while gas schedules daily.

With more and more natural gas-fired generation coming online in the PJM footprint, gas/electric coordination is increasingly crucial.

PJM continues to work to strengthen its coordination with the natural gas industry to enhance grid reliability and operational flexibility.

Operating Day Challenges

Daily market timing differences in the two industries can be a challenge for generators scheduling gas.

In effect, gas delivery to generators begins 10 hours after PJM's operating day begins at midnight. Generators must straddle two consecutive gas operating days to cover one electric operating day, thus complicating gas procurement for generation.

To mitigate this operational challenge and at the direction of the Federal Energy Regulatory Commission, PJM has changed the timing of the Day-Ahead Market to better align with the natural gas pipelines' nomination timelines.

Under the new schedule, PJM posts Day-Ahead Market results by no later than 1:30 p.m. eastern, which is in advance of a new 2 p.m. eastern Timely Nomination cycle deadline for generators to procure the delivery of natural gas to their units.

These changes went into effect on April 1, 2016.



Communication between Industries

Communication between the natural gas and electric industries regarding fuel supply and operational issues continues to be improved. FERC Order 787 acknowledged the need for improved communications and granted the natural gas pipeline and electricity industries permission to share non-public, operational information with each other for the purpose of promoting reliable service or operational planning.

PJM also signed a memorandum of understanding in 2015 with several large interstate natural gas pipelines that provide fuel for electric generators in the PJM footprint, spelling out coordination efforts to improve reliability.

To address this need on an ongoing, dedicated basis, PJM also established an operations-focused Gas Electric Coordination Team. The team is focused on sharing real-time information between PJM operations and the natural gas industry for operational planning purposes.

Ongoing Study

In a major initiative, six grid operators, including PJM, partnered to analyze the natural gas infrastructure serving a large portion of the Eastern Interconnection.

Completed in July 2015, the study analyzed all the elements of the natural gas system serving the interconnection and looked at the adequacy of the gas system to satisfy generation needs over five- and 10-year horizons; identified contingencies on both systems that could negatively affect the other; and examined the pros and cons of dual-fuel capability for generation versus expanding gas system infrastructure.

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