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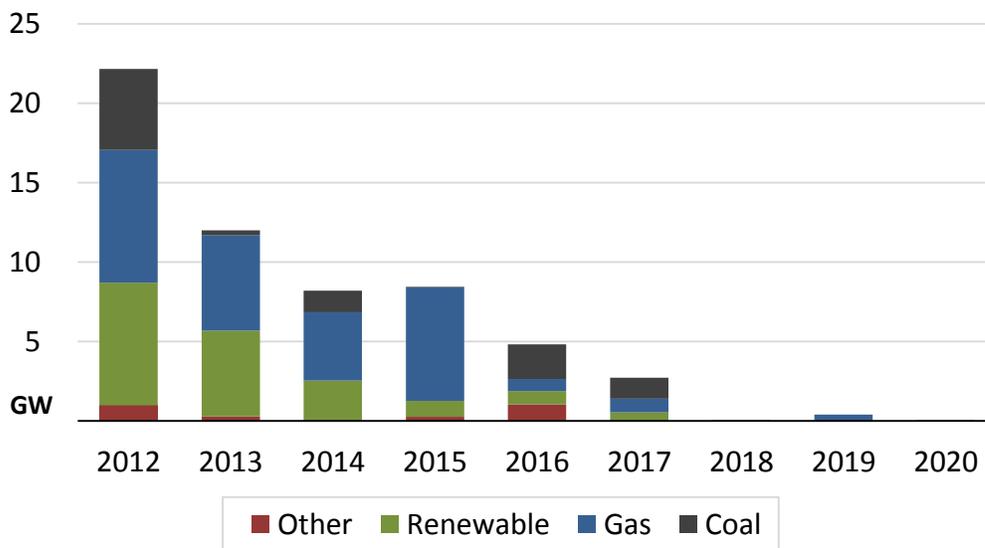
## Natural Gas and Electric Market Coordination Takes Center Stage with FERC Docket AD12-12-000

Natural gas-fired generation is on the rise, increasing from 16% to 24% of the U.S. power generation mix over the past decade. Buoyed by robust production, low prices and a strong competitive position versus other generation options, natural gas generation is poised for continued growth (See Chart). Simultaneously, electricity generation currently represents about 30% of total U.S. natural gas demand and is the fastest growing source of demand. By contrast, natural gas use in the residential and commercial sectors has been relatively flat for at least a decade due to improvements in energy efficiency. This growing interdependency between the electric and natural gas sectors is raising questions about coordination and sustained reliability across the systems.

Responding to coordination concerns, the Federal Energy Regulatory Commission (FERC) issued a [notice](#) requesting comments on a series of [questions](#) posed by Commissioner Moeller. The scope of the inquiry was expanded through an additional [request](#) for comments from Commissioner LaFleur. The following issue brief examines the opinions expressed in the 80+ comments filed in the FERC AD12-12-000 Docket and identifies key questions to be addressed in this evolving dialogue.

### New Capacity Additions by Fuel Type

Source: U.S. EIA-860, Planned and Under Construction



## Background

Pending coal-fired power plant retirements and increasing levels of intermittent renewable resources have brought attention to the critical role of natural gas-fired generation in the U.S. power sector and the importance of closer coordination across the natural gas and electric markets. The difficulties experienced during a cold weather episode in the Southwest in February 2011 brought into focus the implications of this growing interdependency<sup>1</sup>.

The National Petroleum Council's 2011 report: "Prudent Development – Realizing the Potential of North America's Abundant Natural Gas and Oil Resources" recommended the development of new policies and practices for better coordination across the sectors and questioned whether current markets can ensure that the necessary gas pipeline capacity will be available to meet future demand for electric generation.

A variety of programs have been launched to better understand potential concerns. In December 2011, the North American Electric Reliability Corporation (NERC) released "2011 Special Reliability Assessment: A Primer of the Natural Gas and Electric Power Interdependency in the United States." NERC is now using this report as a foundation for further engagement with stakeholders across both sectors. The North American Energy Standards Board—an industry forum for the development and promotion of standards to better coordinate the markets for wholesale and retail natural gas and electricity- has formed a committee to review market harmonization issues and to make recommendations to the Board by September 2012.

Initiatives are also underway to address reliability questions specifically associated with new Environmental Protection Agency clean air rules. FERC is formulating its role in advising the EPA on the reliability impacts of power plant retirements and retrofit projects and FERC and the National Association of Regulatory Utility Commissioners (NARUC) are hosting forums on reliability issues in as a part of NARUC annual meetings.

In February, FERC advanced the national discussion with the launch of a new administrative docket on natural gas and electric market coordination.

## Key Takeaways

The questions from Commissioners Moeller and LaFleur addressed a wide range of topics including the appropriate role for FERC in overseeing better coordination and the impact of the expected retirements of coal and oil-fired generation on the need for gas and electricity coordination. The following discussion highlights key topics raised in the responses.

## Need for Further Study with Regional Focus

The need for further study was a key theme in most comments and many proposed that FERC facilitate a series of region-specific technical conferences. Commenters emphasized the importance of studying regional differences across natural gas and electricity markets. Key differences include variations in power market design, power generation mix, demand profiles for both natural gas and electricity, and natural gas and electric transmission infrastructure.

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<sup>1</sup>An August 2011 report by the FERC and North American Electric Reliability Corporation assesses this three day cold weather event. The report states that gas shortages were not a significant cause of power outages and rolling blackouts were not a primary cause of gas production declines; however, both of these conditions contributed to the problems experienced. ([www.ferc.gov/legal/staff-reports/08-16-11-report-pdf](http://www.ferc.gov/legal/staff-reports/08-16-11-report-pdf))

Commenters also emphasized the need to leverage ongoing work within the various regions. Initiatives in ISO New England (ISO-NE), New York Independent System Operator (NYISO) and Midwest Independent Transmission System Operator (MISO) were frequently cited.

- **ISO-NE:** As part of its Strategic Planning Initiative, ISO-NE assessed natural gas infrastructure capacity versus New England's projected gas-fired generation needs through 2020. The initial findings show that the region's gas delivery system is inadequate to fully serve regional power plant demands on a winter design day over the next decade. ISO-NE points to the need for improved incentives to assure fuel and resource availability to address regional reliability needs.
- **NYISO:** NYISO launched an Electric and Gas Coordination Workgroup in January to improve coordination across the natural gas delivery and electric generation systems. The workgroup is preparing a study that will assess the adequacy of the regional gas pipeline system to supply the aggregate natural gas needs for electric generation for a 10 year outlook. The study will also evaluate benefits and costs of dual fuel capability and how contingencies in the natural gas and electric systems could impact reliability between the systems.
- **MISO:** In February MISO released a gas and electric infrastructure interdependency analysis. The report analyzed potential natural gas demand from natural gas-fired power plants through 2030 and compared this against projected natural gas pipeline and storage capacity. The study raises potential concerns about the timing of infrastructure projects and notes that regulators will need to fast-track pipeline construction projects in order for gas supply infrastructure to keep pace with power generation demand.

### **Availability of Adequate Gas Pipeline and Storage Capacity**

New interstate gas pipeline capacity is developed based on firm contracts, whereas generators can rely on a mix of gas delivery mechanisms including interruptible service. While the pipeline industry has a strong track record of reliably serving electric markets, concerns have been raised as to whether the necessary capacity will be available in the future (especially during periods of peak electricity demand) if electric generators do not take a higher degree of firm capacity service than what occurs today. Many generators in wholesale electricity markets are reluctant to take firm pipeline service because current electricity market structures do not afford the opportunity to recover this higher cost of service. Some generators mitigate supply risk by maintaining end-of-pipe storage capacity. Others state that the spot markets are robust enough to provide them multiple supply options, although they have acknowledged that they are willing to accept the risk of disruption and the lost revenues because the alternative is too costly. Commenters expressed a wide range of views on whether current procurement practices will in fact lead to inadequate supply and the potential solutions to this concern.

Potential solutions addressed in comments include:

- **Voluntary Market Solutions:** Let individual pipelines and their customers develop creative market solutions. Commenters noted that some tailored services have already emerged that address large swings in demand due to power generation needs.
- **Demand Response:** Expand the role of demand response programs during times of natural gas system stress, in addition to electric system stress, to provide appropriate market signals to manage overall gas demand.

- **Dual-fuel Capacity:** To promote diversity of fuel supply, new incentives could be provided for generators that have dual-fuel capabilities. These generators could be allowed to offer their energy and set market clearing prices based on liquid fuel costs during periods of natural gas system stress.
- **Deliverability Testing:** New gas-fired generators could be required to demonstrate that adequate gas delivery capacity will be available to operate during periods of peak gas demand. If capacity is not available, the generator would have to support the necessary upgrades to the delivery system.
- **Firm Capacity:** A wide variety of options were presented for generators to hold firm gas contracts. They include options from providing incentives for select generators to hold firm contracts all the way to requiring all generators to hold firm contracts. Other commenters noted that defining “firm” is a matter of degree and stakeholders should address what level of firm service is necessary to meet an acceptable level of reliability.

All of these potential solutions present trade-offs, including added costs. Key questions that will need to be addressed when evaluating various options include: Is this a significant problem and how does it vary by region? Would the proposed solutions be effective and what are the associated costs? How could added costs be recovered in the marketplace? How could potential solutions alter competition among generating facilities? Are there additional unintended consequences associated with additional market interventions?

### **Questions over Communications, Scheduling and Harmonization of Trading Days**

Trading days differ across natural gas and electric markets. Although U.S. and Canadian interstate pipelines use a uniform gas day, times for scheduling electricity vary regionally. Inconsistent scheduling periods can result in gas-fired generators either buying gas without knowing that its power will be scheduled or submitting a power bid before knowing if the gas can be purchased and scheduled. For this reason, market operators often schedule more capacity than their load forecast would dictate, and then dispatch only a portion of them. Intraday timelines are also inconsistent and the electricity markets are much more liquid than natural gas.

More specifically, problems were cited where a generating unit that was not scheduled for dispatch is called upon after the first day-ahead nomination period has passed. This can be very challenging for units with low capacity factors that are called to dispatch in unpredictable situations. It can be difficult for these units to obtain the necessary supply and transportation service and expensive to start up and run profitably.

Although these challenges are widely observed, there is no consensus on what, if any, actions should be taken to address them. Some commenters note that scheduling problems are infrequent and that harmonization would be costly and could disrupt gas market liquidity. Others cite communication technologies that could be deployed along with the appropriate rule changes that would enable gas nominations to be done on an intra-day basis to more efficiently use interstate pipeline capacity. Comments also identified potential efficiency benefits that could come by reducing the time interval between when natural gas supply and transportation is scheduled and when the gas is actually consumed for generation and the role for better coordination of weather forecasting.

Stakeholders’ comments for the FERC AD12-12-000 Docket have helped to clarify the concerns, differences of opinion and complexities associated with natural gas and electric market coordination. While many views have been expressed on the appropriateness of new processes and policies, more work lies ahead through analyses and dialogue to further define specific risks and assess the potential responses that can address them.

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