

THE ROLE OF REGULATORS AND GRID OPERATORS IN MEETING NATURAL GAS AND ELECTRIC COORDINATION CHALLENGES

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Summary of Main Points:

1. Adding gas-fired generating capacity to a region can lower costs, expand use of a domestic fuel source, increase generation efficiency, improve grid flexibility and reliability, provide environmental benefits, and facilitate the integration of variable renewable resources. In this context, improving the coordination of gas and electric markets must be viewed not as a challenge, but as an opportunity.
2. With an important caveat, there is little reason why heavy reliance on natural gas-fired generation should diminish the reliability of power grid operations.
3. The caveat is the following: natural gas infrastructure must be sufficient to meet the coincident demands of heating, industrial processes, and electricity generation at all times.
4. In regions with *adequate* natural gas infrastructure, grid operators and regulators are key to planning for and avoiding natural gas infrastructure constraints.
5. In regions with *inadequate* natural gas infrastructure, grid operators and regulators are key to planning for and relieving natural gas infrastructure constraints, or otherwise ensuring reliable operations in the face of constraints.

Good morning, and thank you, Chairman Whitfield and members of the Subcommittee, for the opportunity to testify before you today. The challenges associated with coordination of electric and natural gas markets is a particularly important one from both price and reliability perspectives for users of electricity and natural gas throughout the U.S.; your consideration of these issues is both appropriate, and well-timed.

My name is Paul Hibbard; I am a Vice President with Analysis Group, a large economic consulting firm based in Boston, where I consult to numerous electric and natural gas public sector and industry clients – including grid operators – on market structure, system planning and operations, and energy and environmental policy. I also have worked half my professional career in state energy and environmental agencies, most recently as the Chairman of the Public Utilities Commission in Massachusetts. So I have followed gas/electric coordination challenges over the past several years with interest from consumer, market, and policy perspectives.

My comments today may be focused on coordination challenges, but it's important to remember that the task of addressing such challenges is driven by the unique opportunity we have to capture the potentially substantial benefits of expanded domestic natural gas production for business and residential consumers of electricity. In this sense, I view the coordination task as less of a reaction to looming challenges, and more of an opportunity – or obligation – for industry players and regulators to proactively capture these benefits in ways that make sense within regional contexts, and that do not jeopardize power system reliability or market efficiency.

So let me summarize my view on coordination issues with five key points.

1. Recognize the benefits of improved coordination. As a former regulator of electric (and natural gas) rates in Massachusetts – at a time when natural gas prices were very high and volatile – I want to emphasize the consumer rationale for better coordination between the electric and natural gas industries. The emergence of shale gas has dramatically lowered the cost of living and doing business in my state. In New England, the price of electricity is almost completely tied to the price of natural gas, a fact that now has regulators and consumers viewing our region’s dependence on natural gas for electricity generation as a good thing, not a bad thing. When considering coordination challenges, this fact must be front and center. We need to improve electric/gas coordination because that will allow electric ratepayers to realize the benefits that our expanded domestic natural gas resource base represents. Adding new gas-fired generating capacity to a region can lower costs, expand use of a domestic fuel source, increase generation efficiency, improve grid flexibility and reliability, provide environmental benefits, and facilitate the integration of variable renewable resources. Improving the stability and efficiency of electric-gas market transactions must be viewed not as a challenge, but as an opportunity.

2. Power grids can be operated reliably with a significant reliance on natural gas. With a critical caveat that I will bring up in a minute, there is little reason why heavy reliance on natural gas-fired generation should diminish the reliability of power grid operations. To the contrary, new and efficient natural gas generating technologies can provide numerous reliability advantages for grid operators. They are relatively easy to develop and site, can be built in various sizes and configurations, and can be located close to where electrical load is. They offer the ability for continuous operation, faster start up, and faster response to grid operator dispatch instructions to ramp up or down than many competing

resource types. Finally, as our states seek to integrate vast amounts of renewable resources, gas combustion turbines and combined cycle facilities offer the best physical operating characteristics for managing the variability associated with such power sources.

3. The caveat: natural gas infrastructure must be sufficient to meet the coincident demands of heating, industrial processes, and electricity generation at all times.

In the timeframe of short run transactions between electric and natural gas markets, the prevailing profit motives of market participants are extremely effective at overcoming issues related to market timing and maintenance scheduling, resource allocation, transportation rights, and supply adequacy and timing. But they simply cannot overcome physical constraints on the flow of gas. This is the fundamental challenge of gas-electric coordination issues. There is a reason why specific efforts to better coordinate gas and electric markets is important in some regions and not others. In some regions, gas production and delivery are more than adequate to meet the coincident demands of all uses, including gas-fired electricity generation, at all times. In other regions, like New England, natural gas infrastructure is or will become increasingly constrained, particularly in the winter. Pipeline and LNG infrastructure is sized to meet heating demands, and is dedicated to heating demands. During times of winter peak heating demand, there is limited space on the region's pipelines to carry gas for electricity generation.

4. In regions with adequate natural gas infrastructure, grid operators and regulators are key to planning for and avoiding natural gas infrastructure constraints. As noted, where underlying natural gas infrastructure is adequate, the profit motives of gas and electric market participants effectively and

efficiently manage sufficient flows of natural gas for electricity generation. However, as natural gas fired generation continues to capture market share, local or regional gas transportation constraints can arise, creating challenges for power grid operations. In these regions, regulators and grid operators must play a proactive role. Regulators should require, and grid operators – whether vertically integrated utilities or regional transmission organizations – should carry out, a careful and continuous forward-looking evaluation of the potential for demand for gas from the power sector to outstrip available excess transportation capacity. In states or regions dominated by vertically-integrated utilities, regulators could also head off these circumstances by requiring utilities seeking to build new gas-fired capacity to evaluate the prudence of entering into long-term firm gas supply and/or transportation contracts to support plant operations.

5. In regions with inadequate natural gas infrastructure, grid operators and regulators are key to planning for and relieving natural gas infrastructure constraints, or otherwise ensuring reliable operations in the face of constraints. Where or when gas transportation infrastructure is inadequate to support all end uses, including electric generation, both regulators and grid operators must play a more reactive role. Grid operators need to ensure that under adverse power system conditions, including constraints on the flow of gas for power generation, there is sufficient capacity to reliably operate the system. There are a number of tools grid operators can use to accomplish this, such as dispatching resources that otherwise would be uneconomic, calling on demand response resources, and activating operating procedures to avoid power disruptions. Key to this, however, is being aware of the status of gas availability for power generation through coordination with regional gas pipelines and power plant operators. In addition, regulators and grid operators can take actions to relieve prevailing constraints through regulatory orders or market structures that promote development of dual-fuel capability,

enhanced demand response, or investment in new natural gas transportation infrastructure where economic.

In short, regulators and grid operators play vital roles in advancing the coordination of natural gas and electric markets, in promoting the development of needed natural gas system infrastructure, and in managing the reliable operation of power systems in the face of gas supply constraints. Given the potential economic, reliability, and environmental benefits of expanded use of natural gas in the electric sector, the efforts of regulators and grid operators in this area should receive heightened attention and effort.

With that, I want to thank you again for this opportunity to comment, and I look forward to any questions you might have.