

SHORT SUMMARY OF TESTIMONY

**GORDON VAN WELIE, PRESIDENT & CEO, ISO NEW ENGLAND
BEFORE THE HOUSE ENERGY & COMMERCE COMMITTEE, SUBCOMMITTEE ON ENERGY & POWER**

“AMERICAN ENERGY SECURITY AND INNOVATION: THE ROLE OF REGULATORS AND GRID OPERATORS IN MEETING NATURAL GAS AND ELECTRIC COORDINATION CHALLENGES.”

TUESDAY, MARCH 19, 2013

- ISO New England is the independent system operator for the New England power grid with three major areas of responsibility: operate the bulk electric system on a 24x7 basis, administer the region’s wholesale electricity markets, and conduct long-term planning of the transmission system.
- In a little more than a decade, New England has seen a transformation in its generation mix, moving from a mix of oil, coal, nuclear, and natural gas generators, to a system with more than half of the electricity production coming from natural gas generation (52%). In addition, the region is seeing the retirement of coal and oil generators, and the introduction of a diverse set of renewable and demand resources.
- Wholesale prices are driven by natural gas generation, but the wholesale electricity markets do not provide adequate incentives for generators to provide electrical energy when called upon by the ISO during stressed system conditions, and in particular for gas generators that have not made adequate and reliable arrangements for fuel supply.
- The region’s reliance on generation with “just in time” interruptible fuel-delivery arrangements has created operational challenges that are escalating rapidly. The region experienced significant operational challenges in January and February when a significant number of generators were unavailable due to uncertain fuel supplies or storm-related outages. We are seeing this more frequently and it is unsustainable.
- The market-based solution to this problem is to strengthen the economic incentives in the wholesale markets to cause generators to make adequate and reliable fuel arrangements, so that they are ready to respond to the ISO when needed.
- New England is urgently working toward solutions that include market changes that provide the incentives necessary to provide greater fuel certainty.

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Chairman Whitfield, Ranking Member Rush, and members of the Subcommittee. Thank you for the opportunity to appear before the subcommittee this morning.

My name is Gordon van Welie, and I am the president and chief executive officer of ISO New England (ISO-NE). ISO New England is the independent system operator for the New England power grid and wholesale electricity markets. We have three major areas of responsibility: We operate the bulk electric system on a 24-hour, seven-day-a-week basis, we administer the region’s wholesale electricity markets, and we are responsible for long-term planning of the transmission system.

Today, I plan to highlight the serious operational challenges facing New England’s power system following a major shift that has occurred in the region’s generation mix. In the past decade, natural gas has become the predominant fuel used to produce electricity in New England; however, the limitations of the current market design and the consequent inadequate fuel arrangements by natural-gas and oil-fired generation have led to serious reliability threats to the bulk power system. Therefore, we are moving at an urgent pace to develop short- and

long-term plans to address these issues, primarily through changes to New England's wholesale electricity markets.

Shift to Natural Gas for Electric Generation

In a little more than a decade, New England has seen a major shift in its generation fleet, moving from a diverse mix of oil, coal, nuclear and natural gas generators, to a system where more than half of the region's electricity (52%) is produced by power plants using natural gas and more than thirty percent is produced by nuclear power (31%), leaving little room for fuel diversity. In addition, we are observing the retirement of coal and oil generators and the introduction of a diverse set of renewable and demand resources, with the potential for a significant amount of wind generation. Wholesale electricity prices are now primarily driven by natural-gas-fired generation, but the wholesale electricity market design currently does not provide adequate incentives for generators to provide electrical energy when called upon by the ISO during stressed system conditions, and in particular for gas generators that have not made adequate and reliable arrangements for fuel supply.

This shift has provided clear economic benefits for New England. The investment risk for new power plants has shifted to private investors, and electricity consumers in New England have benefited from the recent low prices in the natural gas market. In addition, the shift toward natural gas has resulted in significant reductions in power-plant emissions of nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon dioxide (CO₂).

New England has a Significant Reliance on “Just in Time” Fuel Delivery

The natural gas and electric industries operate under different regulatory, contracting and operational structures, but are increasingly interdependent.

Electricity supply and demand must be balanced on an instantaneous basis and problems on the electric system require immediate action, often through the operation of fast-responding gas generators. However, if generators have not contracted for gas prior to the electric operating day, the gas system may not be able to respond to the real-time, instantaneous demands of the electric system. This is particularly acute in New England, where the region has a significant reliance on “just in time” interruptible fuel delivery and it is clear that the gas system is inadequate to meet the demands of electric generators during peak periods.

When power plants do not have the fuel they need to operate it creates tremendous operational challenges and threatens reliability. We are seeing this on a more frequent basis, and we believe the status quo is unsustainable.

For power-grid reliability to be maintained, we need to have adequate levels of fuel inventory within the region, either through storage or reliable transportation arrangements so that the electric sector is ready to respond whenever called on by the ISO. Those arrangements should be incentivized through changes to the wholesale electricity market design, so as to provide strong economic signals for generators to perform when needed. It is likely that this will result in incrementally higher wholesale prices in order to pay for the improved reliability that we seek.

The region realized a nearly \$7 billion reduction in wholesale electricity costs over the past five years as natural gas prices fell to record lows in 2012. New England would benefit by using some of this savings to invest in infrastructure to expand the region's access to low-priced natural gas and strengthen the reliability of a power system that will become increasingly dependent on natural gas.

New England has Inadequate Natural Gas Infrastructure for Electric Demand

New England cannot access the full benefit of domestic shale-gas deposits because of pipeline constraints leading into New England from the west and south.

The interstate natural gas pipelines operate under a business and regulatory model that requires a long-term firm commitment by the pipeline customer. Because the current wholesale electricity market design does not provide gas generators with the necessary performance incentives, we have found that generators often do not make arrangements to ensure that they have an adequate and reliable fuel supply for the output of their facilities. These arrangements can include dual-fuel capability, contracting for liquefied natural gas (LNG), or contracting for reliable gas supply and transportation.

The region has historically relied on its oil and coal generation to provide fuel diversity and offset the operational risks associated with a constrained gas transportation system. However, the confluence of low wholesale market prices (primarily caused by low natural gas prices), high oil prices (which limit the opportunities to profitably operate), and increasing environmental compliance costs is causing these generators to retire and/or limit the amount

of fuel inventory that they carry. Thus, our dependence on gas generation is poised to increase and our operational options are becoming more limited.

The market-based solution to this problem is to strengthen the economic incentives in the wholesale markets to encourage generators to make adequate and reliable fuel arrangements, so that they are ready to respond to the ISO's call to produce electrical energy when required. This, in turn, will create a demand for reliable fuel services, which could be served by additional investment in gas pipeline and/or storage infrastructure, including dual-fuel infrastructure.

However, the region faces a regulatory conundrum. The natural gas generators generally have a short- to medium-term financial horizon and they are a diverse group with diverse market interests. Thus, they are a group of "fragmented buyers" who are unlikely to enter into long-term fuel arrangements on a large scale. This does not align with the long-term commitment preferred by investors in gas pipelines and gas storage infrastructure.

The New England states are studying the ability of the natural gas pipeline system to satisfy both heating and electric market demand in the region. These efforts are intended to provide information to policymakers and market participants on a range of possible solutions to future natural gas infrastructure needs. The value of (and need for) natural gas extends beyond the sphere of electricity generation.

January-February 2013 Operational Concerns

This winter, New England did not experience record or sustained cold temperatures, or unusually high demand for electricity; however, wholesale electricity prices rose significantly during this period because of physical constraints moving the lowest-priced natural gas into New England. Natural gas prices in late January spiked to \$34 per million British Thermal Unit (\$/MMBtu), in contrast to prices below \$4/MMBtu across most of the country. Wholesale electricity-energy prices in New England increased more than 100% in January and more than 300% in February compared to 2012.

During that period, as well as during a significant winter storm in early February, ISO operators had to cope with multiple instances where generators (both gas- and oil-fired) could not get fuel to run. Our experiences this winter lead us to conclude that the status quo is not sustainable.

At one point during the winter storm, more than 6,000 MW of generation was unavailable due to uncertain fuel supplies or storm-related outages. Because the gas market operates during normal business hours and the storm occurred over a weekend, natural gas generators were hindered in their ability to access additional gas supplies because they could not access the gas market. As the region's dependence on natural gas grows it will become increasingly important to have a flexible gas supply system that can meet the demand for electricity 7 days per week, 24 hours a day.

These concerns will likely continue until investments are made in additional gas pipeline and storage infrastructure and changes are made to achieve greater operational alignment between the two industries.

New England is Working Toward Market Solutions

ISO New England is working with the New England states and its stakeholders to develop market changes to provide the economic incentives necessary to ensure that generators have adequate and reliable fuel supplies. These include:

- Changes to our wholesale markets to improve electricity price formation, improve the ability of generators to reflect the true cost of fuel in their offers to sell electricity , and strengthen performance incentives for generators and demand resources;
- Changes to the timing of our electricity market to provide additional time for generators to secure fuel from the gas market to meet their obligations in the electricity market, and to provide system operators additional time to call on non-gas-fired-generators if needed; and
- Expanding the amount of resources held in reserve to respond to the sudden loss of generation due to a system contingency.

Additional flexibility in the natural gas industry would also help address the challenges of increasing interdependency between the two industries. Power generation is rapidly becoming the largest customer for natural gas pipelines and the gas sector could assist with reliability efforts if gas suppliers provided generators with additional opportunities to obtain

fuel outside of normal business hours, and if pipelines would offer more flexible scheduling, additional services, and provide real-time information on the status of the pipeline system. In the long run, it would be helpful for the Federal Energy Regulatory Commission (FERC) to improve the operational alignment between the electric and gas systems.

Conclusion

New England is one of the first regions to face these reliability challenges, primarily because of the shift in the generation mix in New England, the current limitations of the wholesale electricity market design, and the limitations of the current fuel supply infrastructure. In conclusion, we recognize that we have to address these issues with a sense of urgency. Discussions are underway with our stakeholders and we will be making multiple filings at the FERC over the next twelve months to address the many components of our action plan.

Thank you.