TESTIMONY OF
GARY L. SYPOLT
CHIEF EXECUTIVE OFFICER
DOMINION ENERGY

ON BEHALF OF
THE INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA

BEFORE THE
SUBCOMMITTEE ON ENERGY AND POWER
COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES

REGARDING
GRID RELIABILITY CHALLENGES IN A SHIFTING ENERGY RESOURCE LANDSCAPE

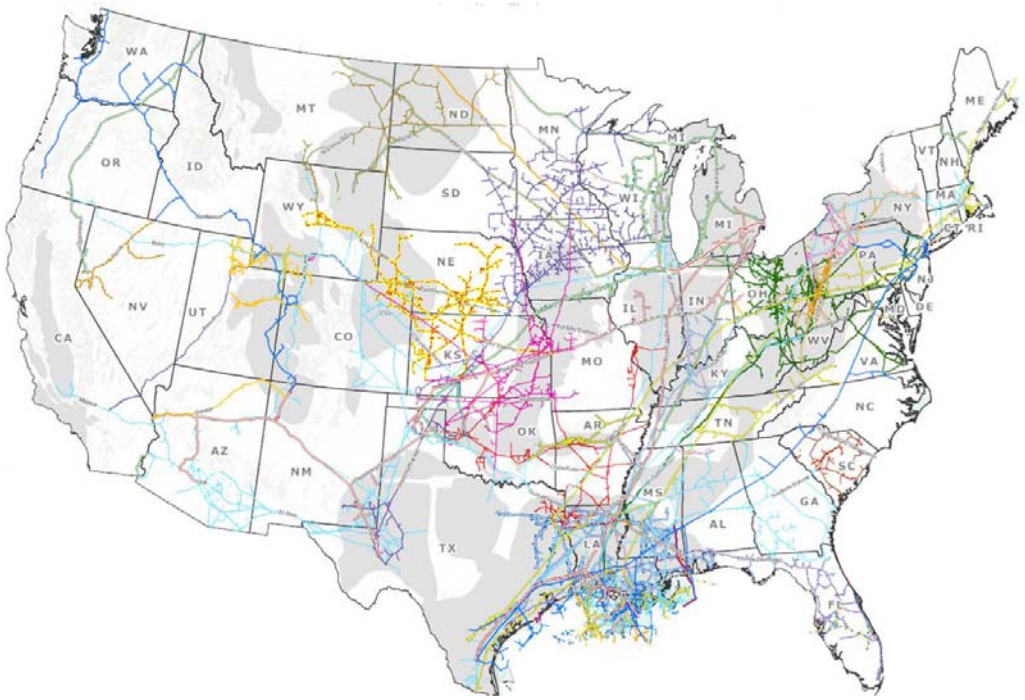
MAY 9, 2013

Good morning Chairman Whitfield, ranking member Rush and members of the Subcommittee on Energy and Power. My name is Gary L. Sypolt and I am the executive vice president of Dominion Resources Inc. and the Chief Executive Officer of Dominion Energy. I am appearing before you today in my capacity as the first vice chairman of the board of directors of the Interstate Natural Gas Association of America (INGAA) and as the chairman of the INGAA board task force on natural gas/electric power reliability.

Dominion, headquartered in Richmond, Virginia, is one of the nation's largest producers and transporters of energy. Dominion's strategy is to be a leading provider of electricity, natural gas and related services to customers primarily in the eastern region of the U.S. Dominion's portfolio of assets includes approximately 27,500 megawatts (MW) of generating capacity, 6,300 miles of electric transmission lines, 56,900 miles of electric distribution lines, 11,000 miles of natural gas transmission, gathering and storage pipeline and 21,800 miles of gas distribution pipeline, exclusive of service lines of two inches in diameter or less. Dominion also operates one of the nation's largest underground natural gas storage systems, with approximately 947 billion cubic feet (Bcf) of storage capacity, and serves nearly six million utility and retail energy customers in 15 states.

INGAA represents interstate natural gas transmission pipeline operators in the U.S. and Canada. Our 26 members account for virtually all of the major interstate natural gas transmission pipelines in North America and operate about 200,000 miles of transmission pipe in the U.S.

U.S. Interstate Natural Gas Transmission Pipelines: A Robust Infrastructure



Thank you for the opportunity to share INGAA's views on meeting natural gas and electric power challenges. As you know, the shale revolution and the newly realized abundance of domestic natural gas have created new opportunities for the U.S. and have prompted significant and rapid changes in our nation's energy economy. One of the principal areas in which this has occurred is in the use of natural gas as a fuel for electric power generation. Interstate natural gas pipelines are the critical link between natural gas suppliers and electric power generators and will play a major role in ensuring the ability to serve this growing market for natural gas.

INGAA and its member pipeline companies have been actively engaged on these questions from the start. We have participated actively in all seven of the Federal Energy Regulatory Commission technical conferences held to date. We have reached out to a wide range of the other stakeholders with an interest in this issue, including the grid operators, state regulators, the North American Electric Reliability Corporation, and groups representing electric generators, as

well as other segments of the natural gas industry affected by these developments. In addition, when customers have requested, individual pipeline companies have offered natural gas transportation services tailored to the particular needs of electric power generators.

There is no question that natural gas and natural gas pipelines can serve gas-fired electric power generation reliably. Choices about the desired portfolio of technologies and fuels for electric power generation are up to the market, the electric power industry, regulators and policymakers. Still, if natural gas is chosen as a fuel for electric power generators, the pipeline industry is confident that it can reliably meet the needs of these customers assuming that they contract for the appropriate natural gas transportation services.

In fact, this is more properly viewed as an electric reliability issue. In particular, the pertinent question is whether the market rules and regulatory structures within a wholesale electric power market place an appropriate value (or price) on reliability such that there is an incentive to ensure the ability of a generator to operate reliably. This is a critical question no matter what option is chosen to ensure the reliability of an electric generator, i.e., contracted pipeline capacity, liquefied natural gas, coal, dual fuel capability or some other means.

Concerns about natural gas/electric power reliability vary by region and depend on several factors. These include the mix of generating technologies within a region, the electric generation reserve margin within a region, the availability of natural gas pipeline and storage capacity within a region, and the structure of the wholesale electric power market within a region[1] and the incentives created by that structure.

New England has attracted the greatest concern in recent years. This is because the region's reliance on natural gas-fired generation has grown significantly, while at the same time the rules in the restructured wholesale power market make it difficult for generators to recover the costs associated with procuring reliable natural gas service. Generators in restructured wholesale power markets cannot include fixed costs (such as the cost of a pipeline transportation contract) as part of their bids in the energy market and consequently are provided with little or no assurance that such costs otherwise can be recovered. Accordingly, generators in New England are making a rational economic choice when they choose not to sign up for firm pipeline

[1] Electric utilities may participate in a bilateral market in which utilities remain vertically integrated or an "organized" or restructured market in which an independent entity operates the transmission system and administers a bid-based power market.

transportation. Rather, generators predominantly rely on pipeline capacity acquired in the secondary market to meet their natural gas delivery needs. The problem is that secondary market pipeline capacity likely will not be available on cold peak winter days when the pipeline's firm customers, typically the local gas utilities, are using their full contractual entitlements. Other factors contributing to the concerns in New England include the fact that the region is at the end of the pipeline network, pipeline capacity in the region already is tight, and the region's growing dependence on natural gas for space heating as low-priced natural gas is winning the competition with other fuels. In short, it has the potential to be the perfect storm.

To be clear, generators in New England are acting rationally, based on current wholesale electric market rules. If anything is to blame in New England, it is the fact that these electric market rules *do not* allow generators to recover the costs associated with ensuring electric reliability, and electric prices do not reflect these reliability costs.

Still, it is a mistake to view these reliability concerns as only a New England issue. For example, there are concerns in the Midwest Independent System Operator (MISO) region given the anticipated level of retirements of coal-fired generation and the likelihood that natural gas generators will backfill this displaced capacity. As MISO Executive Vice President Clair Moeller testified at the March 19, 2013 hearing before this subcommittee, MISO estimates that about 11.5 gigawatts (GW) of coal-fired generation could need to be replaced to comply with environmental regulations.[2] MISO is using this time to identify potential impediments to integrating this much gas-fired generation and to plan accordingly. There also could be concerns about electric reliability in regions, such as the Pacific Northwest or the southwest, that have made heavy commitments to variable renewable generation and where gas-fired generators will be expected to backup these renewable generators.

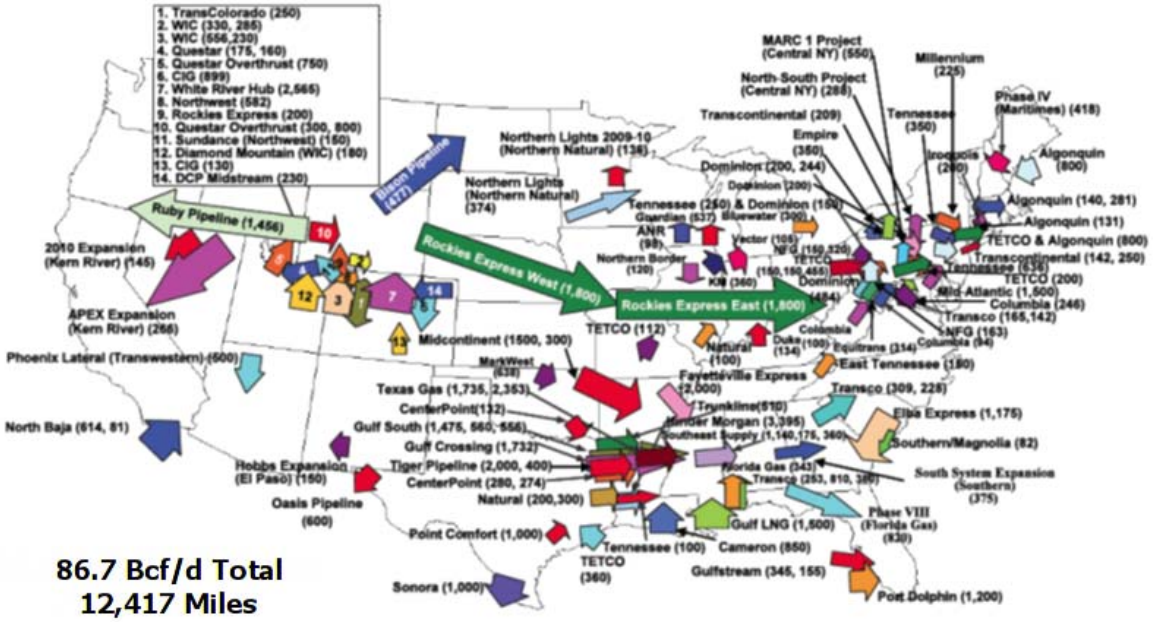
The good news is that the interstate natural gas pipeline industry has a proven track record of building infrastructure in response to market demand. If the market signals that it needs additional capacity (in the form of firm contractual commitments for the capacity) the industry

[2] Testimony of Clair J. Moeller, Executive Vice President of Transmission & Technology of the Midwest Independent Transmission System Operator, Inc. (MISO), Before the House Subcommittee on Energy and Power of the Committee on Energy and Commerce, United States House of Representatives, March 19, 2013, "MISO's 2013 1st Quarter Survey: Impacts on Coal-Fired Generation Capacity (GW)." The Brattle Group also projects 11-16 GW in coal retirements in the MISO region by 2016. Metin Celebi, "U.S. Coal Plant Retirements: Outlook and Implications," The Brattle Group, January 24, 2013. Affected power plants will have to comply with the Environmental Protection Agency's (EPA's) Mercury and Air Toxins (MATS) Rule for Power Plants by April 16, 2015, with the possibility for a one or two year extension on a case-by-case basis.

can add new pipeline capacity in a timely, market-responsive manner. Between January 2003 and March 2013, pipelines placed into service more than 12,000 miles of new interstate pipeline capacity.[3] By comparison, only 1,113 miles of high volatage interstate transmission lines were built between January 2000 and September 2011. There is no reason to doubt the natural gas pipeline industry's ability to build the capacity needed to keep pace with market demand – whether it is a "supply push" pipeline that will access new shale gas production or a "demand pull" pipeline to deliver natural gas to growing consumer markets.

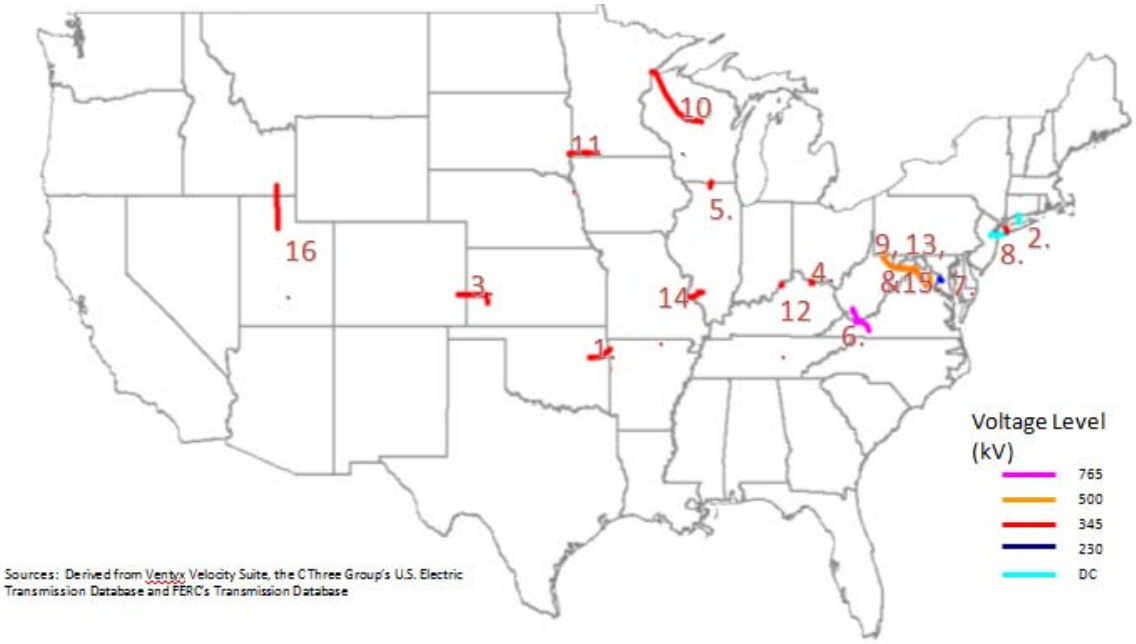
Proven Track Record of Building Pipeline Infrastructure
Over 12,000 Miles in Ten Years

Major Pipeline Projects In-Service: January 2003 – March 2013



[3] Federal Energy Regulatory Commission, Office of Energy Projects.

High Volatage Interstate Transmission Lines Built
January 2000 – September 2011
1,113 Total Miles



While there are parallels between the natural gas and electric power industries, there also are significant differences in the physics of moving natural gas and electricity, how the industries are regulated and the commercial models for doing business. In thinking about natural gas and electric power market coordination, it is important to appreciate these differences. The key features of the natural gas model and, in particular, interstate natural gas pipelines include the following:

First, pipelines are "open access" transporters and storage providers. That means that pipelines must serve all customers (or shippers) with no undue discrimination. Pipelines transport natural gas for local gas utilities, marketers, industrial users, producers and power generators. These customers typically purchase natural gas transportation under the same rate schedule and under the same terms and conditions of service. Accordingly, pipelines cannot "unduly discriminate" to favor electric generators over other customers.

Second, pipelines provide storage and transportation on a fully unbundled basis. Pipelines no longer buy and sell the natural gas commodity; instead, pipelines are transporters only, much like freight railroads. The customer must purchase and deliver its own natural gas to the pipeline. Pipelines then transport that gas to the customer's delivery point.

Third, pipelines compete for market opportunities. Pipelines do not have dedicated service territories. Often more than one pipeline competes to serve a new or increased load. The Federal Energy Regulatory Commission (FERC) may authorize the construction of a pipeline project, but the market ultimately picks the winners and the losers.

Fourth, a fundamental principle of FERC rate regulation is that only the shippers that benefit from a new or expanded pipeline should pay for it.[4] FERC calls this "incremental pricing." Unlike the electric industry, pipelines cannot socialize the costs of expanding the system for one customer, such as a generator, across all customers.

Fifth, pipelines are designed to meet the needs of shippers with firm contracts. Unlike electric utilities, pipelines typically are designed with little or no excess capacity (i.e., there is no reserve margin). Firm shippers pay fixed charges in order to reserve capacity on the pipeline. In exchange, these customers receive the highest scheduling priority.

Sixth, there is a secondary market for natural gas pipeline capacity. When firm shippers do not need to use their full contracted amounts, they may resell their capacity to other shippers (also known as capacity release). Or, if a firm shipper does not either use its capacity or release that capacity to another shipper, the pipeline may sell the capacity as interruptible transportation. During periods of heavy natural gas demand, however, when firm shippers are using their full contractual entitlements, there may be no pipeline capacity available in the secondary market, in which case shippers without firm capacity may be unable to arrange the delivery of natural gas.

Seventh, customers ensure reliability individually by taking responsibility for a portfolio of natural gas services that meets their needs. A pipeline, for example, cannot dictate that any customer contract for firm pipeline transportation.

Eighth, interstate pipeline service is not curtailed based on end-use priorities. For example, a pipeline must serve a toy factory that holds firm pipeline transportation over an electric generator that holds only interruptible transportation.

[4] FERC policy permits such cost to be socialized (or rolled-in) only when the new pipeline will reduce the gas pipeline transportation rates for all shippers or when the proponent can demonstrate that the expansion benefits existing customers, such as an expansion that improves system reliability or flexibility.

The restructuring of wholesale natural gas markets has been a remarkable success. The goal of Congress in decontrolling natural gas at the wellhead was for consumers to reap the benefits of competition. FERC's restructuring of interstate natural gas pipelines in the wake of wellhead decontrol greatly facilitated the achievement of this goal. As demonstrated by pipelines' robust infrastructure development over the past decade, illustrated above, the natural gas model works. This success should not be undermined as policymakers examine how to achieve greater natural gas and electric power market coordination.

While natural gas pipelines are willing to consider changes to improve the efficiency of natural gas markets and natural gas transportation, fundamental changes must occur in the restructured wholesale power markets. INGAA agrees that improving communications between the gas and electric industries and additional scheduling opportunities should be considered. Yet, if a region does not have adequate natural gas infrastructure to meet growing reliance on gas-fired generation, electric reliability will not be guaranteed by additional communication or capacity scheduling opportunities. These enhancements will not create new pipeline capacity.

Pipelines recognize that electric power generation is the largest and fastest growing market for natural gas, and we are excited to serve this market. Still, generators are not the only ones that rely on interstate pipelines. In fact, natural gas utilities, producer/marketers and industrial customers are often the entities that contract for firm pipeline service. These customers pay for reliability, and they are entitled to receive it. Such firm customers have reason to be concerned if the quality of their service is threatened by non-firm customers that have not contracted for appropriate services. This is a particular concern when generators take unauthorized volumes from a pipeline in order to meet their commitments to generate electricity.

This disconnect between the incentives created by wholesale power market rules and the need for commitments to ensure the availability of pipeline capacity has been widely noted, including by two members of the FERC. In testimony before this subcommittee on March 19, Commissioner Cheryl LaFleur stated that "there is often a disconnect between market price signals and the associated infrastructure that is necessary to support the gas resources in those markets, especially on a regional basis."[5] She noted that the current legal and regulatory system for certifying pipelines works extremely well and pointed out some of the problems of electric generators relying solely on interruptible transportation or released pipeline capacity.

[5] Summary Testimony of Commissioner Cheryl A. LaFleur, Federal Energy Regulatory Commission, Before the House Subcommittee on Energy and Power of the Committee on Energy and Commerce, United States House of Representatives, March 19, 2013 at 3.

In addition, at an April 30, 2013 public meeting, Commissioner Tony Clark stated that "the breakdown that we seem to be having [appears] to be on the electric side of the equation, especially in these regions that have, for better or worse, restructured the retail side of their operation."[6] Commissioner Clark highlighted that one factor in determining the immediacy of concerns related to integrating the gas and electric industries is whether a region is in a retail restructured electric market versus a state commission-regulated electric market where generators can recover of the cost of holding firm pipeline services.

Based on the discussions at the FERC technical conferences on natural gas and electric power market coordination, it appears that electric generators that remain within vertically integrated utilities typically contract for the portfolio of pipeline and storage services needed to ensure the reliability.[7] The fact that these generators have the ability to both subscribe for the appropriate level of firm transportation and storage services and to support infrastructure expansions, when necessary, further reinforces the point that the solution to concerns about ensuring the reliability of natural gas-fired generation lies in the design of organized wholesale power markets.

There is urgency to addressing these issues, particularly in New England. In his March 19 testimony before this subcommittee, ISO-New England President and Chief Executive Officer Gordon van Welie stated:

> 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.[8]

This point was reinforced by the ISO New England Winter Operations Summary: January-February 2013, which referred to "persistent reliability concerns, which are most acute during extended cold-weather periods when natural gas demand by local distribution companies [local

[6] Kate Winston, "Most gas-power coordination woes due to electricity: FERC's Clark," *Gas Daily*, May 1, 2013 at 5.
[7] While this most commonly is the case with generators in bilateral markets, it also occurs in cases in which regulated generation is constructed in restructured markets.
[8] Testimony of Gordon van Welie, President and Chief Executive Officer, ISO New England, Before the House Subcommittee on Energy and Power of the Committee on Energy and Commerce, United States House of Representatives, March 19, 2013 at 1.

gas utilities] is high."[9] The same report stated that "[t]he key point from this winter is that the region needs to develop immediate solutions to avert serious threats to system reliability next winter."[10]

Without a doubt, there will be costs associated with ensuring reliability through the combination of investment in new natural gas pipeline capacity and other means. Still, this must be balanced against the cost of failing to ensure reliability. For example, a January 2013 report to ISO New England examined the benefits of reducing the probability, frequency or duration of bulk power system interruptions. As a benchmark, the report cited estimates that the 2003 Northeast blackout, which caused wide-spread electricity outages in New England for two days, cost the region between $4 billion and $10 billion (in $2003). The same report estimated that a future power outage in New England could cost anywhere from $500 million for a momentary outage to over $6 billion for an eight hour outage.[11] In the face of such costs, the ISO has proposed a number of short-term and long-term market and operational solutions to increase reliability and efficiency, including changes to electric market pricing incentives, increasing use of dual-fuel capacity and in-region LNG storage, and new interstate natural gas pipeline capacity.

The interstate natural gas pipeline sector enjoys a favorable legal and regulatory framework for the approval of new infrastructure. Even with this regulatory framework, it typically takes three to four years from pipeline project inception to "steel in the ground" that is ready to transport natural gas. Moreover, the law requires FERC to find that there is a need for a pipeline before construction can be authorized. This most typically is done based on a demonstration by the pipeline company that is has long-term firm contracts for the proposed project. While we respect the stakeholder processes within the ISOs and the challenging nature of these issues, electric reliability cannot be addressed at a snail's pace. The fundamental questions about reforming wholesale power market rules to value reliability must be resolved soon. If this does not happen, there is a significant risk that new pipeline capacity and other solutions needed to ensure reliability will not be ready when needed.

The availability of natural gas for power generation is one of the many benefits that the nation is realizing from the shale revolution and the resulting abundance of natural gas. This has been a

[9] ISO New England, *Winter Operations Summary: January – February 2013*, Draft – For Review and Discussion, February 27, 2013.
[10] Id.
[11] Memo from Paul Hibbard, Analysis Group to ISO-New England, "Information from the Literature on the Potential Value of Measures to Improve System Reliability," January 24, 2013 at 3.

remarkable change that has brought our nation significant economic, environmental and strategic benefits. For example, a July 2012 Bank of America Merrill Lynch study estimated that lower utility costs, resulting from lower natural gas prices, have saved U.S. companies and consumers an average of $566 million *a day*. At the same time, due largely to the increased use of natural gas for electric power generation, U.S. CO_2 emissions have been reduced to their lowest level since 1992. And the resurgence of domestic natural gas and crude oil production has greatly improved our energy security.

To realize these benefits fully, however, we must address the obstacles that in some markets may undermine the ability to construct the natural gas infrastructure needed to serve the growing electric generation market. Market rules must be reformed to value investments in reliability and to ensure the ability to recover such costs from those who benefit from reliable electricity. With such arrangements, the necessary natural gas infrastructure can and will be built. Without such arrangements, there will be a much greater risk that parts of the nation will experience increasing blackouts, volatile power prices and degradation of the quality of service for natural gas utilities and other traditional natural gas pipeline customers.

Let me thank the Subcommittee, once again, for permitting me the opportunity to testify today. I would be happy to answer your questions.

Summary of Testimony for
Gary L. Sypolt

- INGAA represents interstate natural gas transmission pipeline operators in the U.S. and Canada.
- The shale revolution and the newly realized abundance of domestic natural gas have created new opportunities for the U.S. and have prompted significant and rapid changes in our nation's energy economy. One of the principal areas in which this has occurred is in the use of natural gas as a fuel for electric power generation.
- There is no question that natural gas and natural gas pipelines can serve gas-fired electric power generation reliably. If natural gas is chosen as a fuel for electric power generators, the pipeline industry is confident that it can reliably meet the needs of these customers assuming that they contract for the appropriate natural gas transportation services.
- Concerns about natural gas/electric power reliability vary by region and depend on several factors. New England has attracted the greatest concern in recent years.
- The problem in New England is that wholesale electric market rules do not allow generators to recover the costs associated with ensuring electric reliability, and electric prices do not reflect these reliability costs. While generators in New England are acting rationally based on current market rules, the end result may be a reduction in electric reliability and a greater risk of blackouts that could be very costly to the region's economy.
- The good news is that the interstate natural gas pipeline industry has a proven track record of building infrastructure in response to market demand. If the market provides timely signals that it needs additional capacity (in the form of firm contractual commitments for the capacity), the industry can add new pipeline capacity in a market-responsive manner.
- Pipelines are designed to meet the needs of shippers with firm contracts. Unlike electric utilities, pipelines typically are designed with little or no excess capacity (i.e., there is no reserve margin).
- The restructuring of wholesale natural gas markets has been a remarkable success. As demonstrated by pipelines' robust infrastructure development over the past decade, the natural gas model works. This success should not be undermined as policymakers examine how to achieve greater natural gas and electric power market coordination.
- Market rules must be reformed to value investments in reliability and to ensure the ability to recover such costs from those who benefit from reliable electricity. With such arrangements, the necessary natural gas infrastructure can and will be built. Without such arrangements, there will be a much greater risk that parts of the nation will experience increasing blackouts, volatile power prices and degradation of the quality of service for natural gas utilities and other traditional natural gas pipeline customers.