

**“Grid Reliability Challenges in a Shifting
Energy Resource Landscape”**

Before the House Committee on Energy and
Commerce, Subcommittee on Energy and
Power

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Testimony of
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Chairman Whitfield, Ranking Member Rush, and Members of the Subcommittee, thank you for the opportunity to testify before you on this important issue. My name is Paul Cicio, and I am the president of the Industrial Energy Consumers of America (IECA).

IECA is a nonpartisan association of leading manufacturing companies with \$1.3 trillion in annual sales, over 1,500 facilities nationwide, and with more than 1.7 million employees worldwide. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets. IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, pharmaceutical, brewing, and cement.

IECA companies are mostly energy-intensive trade-exposed industries. This means that they are substantial consumers of natural gas and electricity, and that relatively small changes to the price of energy can have significant direct impact on competitiveness and jobs. According to the Energy Information Administration (EIA), the industrial sector uses about one-third of U.S. electricity and natural gas.

The key message of this testimony to Congress is that consumers are not being served by a combination of actions and inactions by policy makers – all of which potentially threaten electricity and natural gas reliability. Because the electric reliability is dependent upon natural gas pipeline capacity reliability, and that no federal agency apparently has responsibility for oversight of natural gas pipeline reliability – means that no one in Washington is in charge of reliability! The U.S. cannot have electric reliability without natural gas pipeline reliability.

Key points:

1. Manufacturing companies are concerned about reliability and its potential cost impact.
2. No one is in charge of natural gas pipeline reliability.
3. How FERC addresses these challenges is important to industrial competitiveness.
4. Greater use of CHP/WHR power generation and use of other forms of energy efficiency and demand response should be considered by FERC.
5. LNG exports peak demand is expected during U.S. winter demand season, increasing reliability concerns, and natural gas and electricity prices.

1. Manufacturing companies are concerned about reliability and its potential cost impact.

Manufacturing companies are concerned about electric reliability due to potential natural gas pipeline capacity constraints and increased dependence on natural gas-fired power generation.

The natural gas and electricity industries provide a service that goes beyond the issues of health and safety. These are services that can determine the competitiveness of the industrial sector with direct and indirect impact to jobs. How efficiently the natural gas and electricity industries operate and at what cost have broad impacts to economic growth and capital investment. In this regard, IECA has two concerns: The potential for natural gas and electric reliability problems that become a safety and cost issue for a manufacturing facility; and the policy changes that the FERC may consider to respond to the challenges in a timely manner.

2. No one is in charge of natural gas pipeline reliability.

Everyone is aware of the NE corridor pipeline constraints and how it has increased prices. Thankfully, policy makers are working to resolve the problem.

What worries IECA is what we do not know about pipeline constraints in other parts of the country. The announced shut down of about 50 GW of coal and oil-fueled power generation units due to EPA regulations, and approximately \$100 billion in new natural gas driven industrial facilities, will place a lot of new demand on the existing pipeline infrastructure.

The question that keeps us up at night is...“Given the momentous market changes underway over the next four years, at peak natural gas demand periods like a very hot summer day or a very cold winter’s night, will there be adequate natural gas pipeline capacity for all natural gas consumers?”

While the North American Electric Reliability Corporation (NERC) has responsibility for overseeing electric reliability and appears to be doing a good job, there is no such organization for overseeing natural gas pipeline capacity reliability. FERC has authority over most aspects of natural gas pipelines but not reliability. They view reliability as a responsibility of the “market.” The decision to build a pipeline is a market decision, not a regulatory decision. We agree with this premise.

While the premise of a pipeline decision to build or not has not changed (and should not change), the market it serves “has changed profoundly” in several complicated ways that greatly increase the potential for reliability problems that never existed before, all at the same time and over a compressed period of time. And, we must be mindful that potential solutions in this arena are capital intensive and where timely environmental permitting is a huge obstacle to speed. These facts make a compelling case for why studies evaluating reliability at future peak demands are necessary to prevent future reliability problems.

Examples how the market has changed to potentially threaten reliability include:

- It is increasingly difficult to build pipelines where they are needed most.
- The confluence of significant shutdown of coal-fired power generation in a short 3-4 year period creates significant new demand and reliability threats. Greater reliance on natural gas power generation increases the severity of daily peaking demand. At peak, is there sufficient capacity to supply competing demand with residential and industrial demand?
- The necessity of many remaining coal-fired power plants to shut down for retrofitting new environmental controls over the next 3-4 years creates significant demand on gas-fired units.
- The significant new natural gas demand by the growing manufacturing renaissance places demand on the same pipelines that are needed to supply gas for power generation.
- LNG export demand will create seasonal winter demand essentially using U.S. storage as their storage. LNG exports of 4.0 to 7.0 Tcf of demand will also consume significant pipeline capacity.
- There are significant changes to pipeline flows. Plus significant changes to existing pipelines, some converting from natural gas to oil and vice versa.

The cumulative impacts of these new market changes demand more oversight to ensure the reliability of natural gas and electricity.

In contrast, for electric reliability, NERC is doing studies that encompass the country to evaluate and provide vital information that supports preemptive action by policy makers and markets to guard against electric reliability problems. And while some regional market organizations like the Midwest Independent System Operator (MISO) are doing studies that look at natural gas pipeline capacity, it only looks at the pipeline capacity in that 13 state region and does not evaluate new loads on those same pipelines before they enter MISO or after they leave. A national overview is needed.

Nonetheless, the MISO study reaffirms potential serious natural gas pipeline reliability concerns. In the analysis, MISO evaluates the impacts of the anticipated closure of substantial generation resources within its footprint and models the requirements to replace that generation.

MISO utilities currently plan to retire 12.6 GW of coal-fired generation in the near term, amounting to about 9 percent of total current capacity. The study concluded that in the short term, more than 65 percent of the pipelines currently supplying gas into the Midwest has insufficient capacity to fully meet the needs of the existing generating units operating at expected capacity factors. For the period 2016-2030, almost 90 percent of the pipelines have insufficient capacity for the existing generating units plus the incremental 12.6 GW coal-to-gas retirement scenario. The results of this study should have served as a red flag to policy makers – but it has apparently not had this effect.

3. How FERC addresses these challenges is important to industrial competitiveness.

How the FERC and the regional markets respond to these challenges may result in consideration of policy changes. In that light, IECA offers several examples of potential policy changes that could negatively impact the industrial sector.

FERC policy that gives certain rights and priority to electric generators for access to natural gas pipeline capacity may provide a potential solution to the electric generation reliability problem but creates a reliability and cost problem for manufacturers regarding their access to such capacity. IECA is concerned about the subordination of all other uses to the needs of a single type of customer – the electric generator. Such an approach would be discriminatory and result in costs that would damage the competitiveness of manufacturing.

a. Maintain no bumping rules

Maintain “no-bumping” rules that provide certainty to a manufacturer that has scheduled their gas for a given day, will not be interrupted to accommodate variable loads, and is critical to manufacturers.

b. Maintain rules that do not discriminate

We are concerned about setting rules or tariff revisions that would give priority to natural gas pipeline loads that serve power generators that have high potential intraday variability. This could force more restrictive multi-intraday or even hourly balancing requirements with stricter imbalance tolerances on “all” pipeline users which would be especially problematic for industrial manufacturing facilities. This rebalancing could result in increased costs and possibly reduced operational flexibility for industrial consumers. In other words, our reliability can become

compromised due to power generator requirements which are fundamentally different from industrial requirements demands.

c. FERC should utilize cost causation principles

If there are increased natural gas interstate pipeline costs to support greater natural gas and electric coordination, it is essential that the current precedent for use of straight fixed variable methodology continue to be used by the FERC for allocating those incremental costs. In addition when implementing this policy, it is FERC precedent when integrating pipeline infrastructure costs that overall rates to customers not exceed 10% of the then current rates, and to require the parties requesting the increased capacity to pay “aid in construction” to the interstate pipeline for the incremental costs not allocated to users via the 10% rule. The industrial consumers who rely on that pipeline capacity should not be expected to pay for the additional costs. Fundamentally, our view is that cost causation principles should prevail and that entities who “cause” the cost should pay for the cost above a threshold level.

d. Potential limits to firm natural gas pipeline capacity

As utilities add more natural gas-fired generation to replace coal and to serve as backup to the intermittent renewable generation, they are contracting for firm natural gas transportation capacity from the interstate pipelines. In many cases they are only using this pipeline capacity on an intermittent basis when the gas-fired electric generation units are operated. However, they contract and pay for the firm capacity to ensure that they can get gas to their units when needed. They can afford to do this because they pass on the cost of the firm transportation capacity to their electricity customers. Oftentimes the utilities will not release the capacity when it is not being used so that others could use it as secondary firm. These operational practices limit the amount of primary or secondary firm pipeline capacity available to industrial manufacturing companies. Coordination and communication is needed between the electricity and natural gas markets to ensure that the pipeline capacity is utilized properly and that firm capacity will continue to be available for manufacturing.

e. Changing natural gas pipeline flows are an issue

The expanded use of natural gas for electricity generation has and will continue to change flow patterns on the natural gas pipeline system. Areas that historically were supplied by Gulf Coast pipelines are now being supplied by new natural gas production from the Marcellus Shale reservoir basins resulting in low rates of capacity utilization and problematic higher rates for industrial companies who may have contracted for firm capacity on those Gulf Coast pipelines.

4. Greater use of CHP/WHR power generation and use of other forms of energy efficiency and demand response should be considered by FERC.

a. Include industrial CHP and WHR as a supporting policy solution

FERC should evaluate the role of industrial cogeneration of power and steam and use of waste-heat-to-power as a supportive policy solution to increasing reliability of the grid through increased distributive power generation. There is a substantial existing capacity of under utilized CHP capacity that with the right policy could provide a source of distributive power supply. Likewise, there is a significant quantity of manufacturers across the country that have excess steam or waste heat that could be converted to economical distributed power generation through the construction of new units. There is substantial side benefits to considering this

policy option. Greater use of CHP and WHR increases the competitiveness of the manufacturing sector thereby increasing high paying jobs, exports and economic growth. A win-win.

b. FERC should include use of energy efficiency as a policy tool

IECA encourages the FERC to broaden its analysis beyond hard electric generation supply sources and also consider all forms of energy efficiency, including demand side management and end-use efficiency, which can serve as low-cost methods to both effectively replace base load generation as well as enhance grid reliability. In this respect, we applaud FERC Order 745 that supports use of demand response. We also support FERC's effort to better quantify the benefits of demand response and efficiency in wholesale markets as set forth in Docket No. RM05-5-020.

We encourage the FERC to streamline the process for industry financed and installed energy efficiency to participate in the PJM capacity auctions and in the capacity constructs implemented by other RTOs and ISOs. The measurement and verification (M&V) protocols that have been developed for energy efficiency participation in this market are too cumbersome and expensive for the industrial sector to undertake. The extensive requirements for M&V appear to be designed for utility participation through use of consultants. Industrial users are unlikely to retain consultants to provide the measurement and verification plans that are required for energy efficiency to participate in capacity markets. There would be much greater participation in these auctions by the industrial sector if the M&V requirements were streamlined for industrial participants.

Importantly, if energy efficiency is pursued as an option, it is vital that industrial companies retain the flexibility to opt out at the state level if companies determine the benefits are not cost effective to the companies.

5. LNG exports peak demand is expected during U.S. winter heating demand season, increasing reliability concerns, and natural gas and electricity prices.

All of the major LNG importing countries are located in the northern hemisphere which means their winter peak demands for LNG will occur when the U.S. is in its peak demand (see Chart 1 below). Higher seasonal demand from LNG could impact reliability and place upward pricing pressure on both natural gas and electricity for all U.S. consumers.

Countries that import LNG have very little storage. This means that essentially, these foreign countries will be using U.S. storage as their storage. Supplying natural gas for export facilities will also consume pipeline capacity in regional markets.

Experts' forecasts of LNG demand vary greatly but range from 4 to 7 Tcf of new natural gas demand. Considering U.S. 2012 demand was 25.5 Tcf, we could experience an unprecedented increase in demand of between 16 percent and 27 percent.

Chart 1

LNG Imports by Country, 2010

Importer	MMtpa
Japan	70.6
South Korea	34.1
Spain	20.5
UK	14.2
Taiwan	11.6
France	10.5
China	9.5
India	9.3
US	8.5
Italy	6.7
Turkey	5.9
Belgium	4.5
Mexico	4.4
Chile	2.3
Portugal	2.2
Kuwait	2.1
Brazil	2.0
Canada	1.5
Argentina	1.3
Greece	0.9
Dominican Republic	0.6
Puerto Rico	0.6
UAE	0.1
Total Imports	223.8

Source: Waterborne LNG Reports, US DOE, PFC Energy

Reliability is an important safety and cost issue. Policy makers should not wait until there is rolling brown outs or black outs to provide oversight of natural gas pipeline capacity reliability.

Thank you.