COMMENTS ON BEHALF OF INGAA FOR DOE QER

STATEMENT OF J. CURTIS MOFFATT, DEPUTY GENERAL COUNSEL AND VICE PRESIDENT – GAS LEGAL, KINDER MORGAN, INC. ON BEHALF OF THE INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA

BEFORE THE QUADRENNIAL ENERGY REVIEW PUBLIC MEETING: GAS-ELECTRICITY INTERDEPENDENCIES

PANEL 2: INFRASTRUCTURE NEEDS THROUGH 2030

JULY 28, 2014, DENVER, COLORADO

Thank you for inviting the Interstate Natural Gas Association of America (INGAA) to present this morning at this public meeting relating to the Quadrennial Energy Review. Good morning, Governor Hickenlooper and Mr. Utech.

I am Curt Moffatt, Deputy General Counsel and Vice President of Kinder Morgan, Inc., appearing here this morning on behalf of INGAA and its member companies.

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. I have had the honor of representing INGAA and a good number of its members for over three decades in policy, certificate and rate proceedings before the Federal Energy Regulatory Commission.

Kinder Morgan, my current employer, is the largest natural gas midstream services provider, and fourth-largest energy company, in North America with a combined enterprise value of approximately $110 billion. Through its consolidated subsidiaries, Kinder Morgan owns an interest in, or operates, over 80,000 miles of pipelines that transport natural gas, refined petroleum products, crude oil, condensate, carbon dioxide, and other products. Approximately 68,000 miles of the transmission assets are interstate and intrastate natural gas pipelines. Kinder

Morgan also owns, or has interests in, storage, treating, and processing facilities through which natural gas is stored, treated, processed, and sold. Kinder Morgan's natural gas pipeline grid is connected to every major natural gas resource play in the U.S., including the Eagle Ford, Marcellus, Utica, Haynesville, Fayetteville, and Barnett Shales, as well as the Uinta and other basins in the Rocky Mountains. Kinder Morgan's major pipelines include El Paso Natural Gas Company, L.L.C., Fayetteville Express Pipeline LLC, Florida Gas Transmission Company, Kinder Morgan Louisiana Pipeline LLC, Kinder Morgan Texas Pipeline Company LLC, Midcontinent Express Pipeline LLC, Natural Gas Pipeline Company of America LLC, Ruby Pipeline, L.L.C., Southern Natural Gas Company, L.L.C., Kinder Morgan Tejas Pipeline LLC, Tennessee Gas Pipeline Company, L.L.C., and numerous other transmission and midstream related assets.

Since its inception in 1997, Kinder Morgan has invested approximately $45 billion in expansions, new-build projects, joint ventures, and acquisitions to grow the company. Expansion of natural gas infrastructure is fundamental to Kinder Morgan's growth plans. Capital investment required for the company's backlog of committed or highly probable natural gas projects totaled $4.6 billion as of June 30, 2014. Approximately $18 billion of additional identified projects are under development.

The experience of INGAA's member companies mirrors that of Kinder Morgan. During the period between January 2003 and March 2013, INGAA member companies built 12,400 miles of new natural gas transmission infrastructure, adding 86.7 Bcf/d of pipeline transportation capacity at an average annual capital cost in excess of $5 billion. The prospects for continued growth in this sector are documented in the study entitled, North American Midstream

Infrastructure through 2035: Capitalizing on Our Energy Abundance,[1] recently published by the INGAA Foundation.

INGAA's recent analysis, and the Nation's experience during this extremely cold winter, both point to the need to build significant new natural gas infrastructure in all regions of the United States. These infrastructure investments are needed to keep up with increased natural gas demand and the changing locations of production. This increased demand reflects the industrial renaissance spurred by abundant, affordable domestic natural gas as well as increased generation of electricity fueled by natural gas.

However, infrastructure designed to meet the challenges of the past will not, necessarily, meet the challenges of the future.

As everyone will acknowledge, the 2013-2014 winter was a demanding one. There were certainly some challenges to serve the energy consumers throughout the U.S. during the extended periods of extreme cold. With but extremely few exceptions, there were no significant or extended service disruptions or curtailments for natural gas pipeline customers who had contracted for reliable, firm service. The few disruptions were caused, not by a lack of supply or failure of natural gas contracting, nomination or scheduling processes, but by mechanical difficulties which were repaired or replaced within a day or two. Given the magnitude of consistent demand across much of the country, the extended, extreme operating conditions and the resulting stress placed on the overall system, the natural gas transmission pipeline industry's performance was remarkable.

Indeed, despite early concerns, and with the help of relatively mild weather so far during the April-October injection season, the natural gas industry is replenishing storage at an

[1] http://www.ingaa.org/Foundation/Foundation-Reports/Studies/14904/14889.aspx

historically high rate to achieve a total U.S. working gas storage level anticipated to approach 3.4 to 3.5 trillion cubic feet in preparation for the upcoming winter heating season. At the end of the 2013-2014 winter heating season, storage levels were at an 11-year low. While the currently expected end-of-season storage level is above the early predictions of little more than 3.0 trillion cubic feet, it is still below the 5-year average of 3.8 trillion cubic feet.

Especially strong natural gas production is also contributing to the ability to refill storage. U.S. Lower-48 daily production, I am told, reached a record high level of 69 billion cubic feet per day earlier this month. The INGAA Foundation Report projects total U.S and Canadian average daily production in 2014 of 83 Bcfd growing to more than 120 Bcfd in 2035, to serve the growing demand in both countries, plus LNG exports and exports to Mexico.

This recent and current operating history underscores the strength and resilience of the interstate pipeline transportation industry and its many customers, particularly the local distribution companies, to transport and deliver the Nation's abundant supplies of natural gas to a steady and growing demand made up of residential, industrial, commercial and electric generation customers, as well as LNG and pipeline exports.

Natural Gas Pipeline Model

One of the major challenges today, as we continue to develop and consume our natural gas resources, is building infrastructure that keeps pace with the evolving supply and demand realities. As mentioned above, the industry has built billions of dollars of new transmission infrastructure over the last decade. But how? Can the industry continue at this pace?

The answer is a resounding yes. Still, it is critically important to understand that this is not a "build it and they will come" business. Pipeline infrastructure is not built on speculation. Instead, natural gas transmission pipelines are built to meet the needs of firm shippers willing to

sign long-term contracts for pipeline capacity utilization and to pay the pipeline a monthly demand charge designed to recover the fixed cost of the pipeline whether the transportation space, while reserved, is used or not. Why is this?

First, natural gas transmission pipelines are capital intensive, long-lived, immobile assets. Compared with other modes of transportation -- a ship, an airplane, a train or a truck -- a pipeline cannot be relocated in response to shifts in the marketplace. While pipelines can be repurposed in some cases (for example, by changing the direction of product flows or converting a pipeline from natural gas to crude oil, natural gas liquids or refined products transportation), such opportunities typically do not exist. Once a pipeline is in the ground the operator, and its investors, have made a long-term commitment.

Second, with respect to pipelines, no pipeline may be built or operated in interstate commerce without first receiving from the FERC a certificate of public convenience and necessity. In order for FERC to grant a pipeline company authority to construct and operate an interstate natural gas pipeline, the Commission must find that the pipeline is needed. In the terms used by the Natural Gas Act, FERC must find that the project is required by the present or future "public convenience and necessity." While this statutory standard can be demonstrated in a number of ways, the most typical way is for the pipeline company to present service agreements in which shippers commit to pay for firm service over a term of multiple years such that the new capacity is not subsidized by existing customers.[2] In other words, if enough customers are willing to pay reservation charges under a multi-year contract for firm pipeline service, the need for the proposed pipeline has been demonstrated.

[2] In some cases, the capital costs may be rolled-into the existing cost of service and yield an average rate lower than the then effective maximum tariff rate which would benefit existing customers.

Finally, FERC regulates the rates charged by interstate natural gas pipelines and these rates typically are established on a cost-of-service basis. (Even when FERC permits pipelines to negotiate rates, the customer must have available the alternative to subscribe for pipeline transportation service at a cost-based recourse rate.) Consequently, if the pipeline developer bets right, it recovers its investment, including the return on the investment that is part of its regulated rate. If the pipeline developer bets wrong, it does not fully recover its investment. There is a very limited opportunity, however, for a pipeline to collect a premium if it wagers correctly and the market value of the transportation exceeds the regulated rate. Moreover, any ability to recover above cost-of-service rates will be short-lived until the next rate investigation instituted under the Natural Gas Act by the pipeline making a voluntary filing or the Commission or a shipper filing a complaint to initiate a rate review.

Given the very limited ability of pipelines to capture above average rates of return and the huge amounts of capital required, there is absolutely no incentive for an interstate natural gas pipeline company and its shareholders to "build it" and hope "they will come." Some level of firm contract commitments has always been, and always will be, required to attract both the equity and debt financing required to provide the vast amounts of capital necessitated to build out the Nation's natural gas infrastructure. To put this in some context, a report prepared for the INGAA Foundation forecasts that capital requirements for natural gas midstream infrastructure through 2035 will exceed $313 billion.

Another bedrock principle of the natural gas industry is that pipeline customers are responsible for ensuring their own reliability by taking a portfolio of gas services that meets their needs. Unlike the electric power industry, no "reserve margin" is built into natural gas pipelines. There is no pre-planned excess capacity to be called upon in a pinch. Pipelines are built to meet

the needs of firm customers and firm customers only. If a customer needs extremely reliable service, then the customer is expected to contract for the firm services that produce that level of reliability. These services would include firm transportation service. They could also include some form of enhanced delivery services such as customized hourly services if available, park and loan services to address swings in demand or storage to manage supply availability and price arbitrage.

In the alternative, if a customer places a premium on minimizing cost, it can purchase interruptible services at lower cost. But just as its name implies, interruptible service is subject to interruption – particularly on days or during times of high demand including either very cold or very hot days. The fact that interruptible service can be interrupted was a lesson re-learned this past winter.

Today's meeting centers around "Gas-Electricity Interdependencies." In this regard, it is worth noting that electric power generators operating in restructured wholesale power markets (in other words, markets administered by independent system operators and regional transmission organizations) in many cases do not hold firm pipeline capacity. Rather, such generators often rely upon interruptible pipeline capacity or firm capacity acquired in the secondary market through capacity release that is often a shorter term transaction with some recall rights retained by the firm shipper that is releasing the capacity.

Another alternative for electric generators is to obtain gas supply at the point of consumption from any of a number of marketers that take on the obligation to deliver gas using a portfolio of natural gas transportation and storage services and natural gas supplies that they have acquired in the competitive market. In yet another model, a generator can secure the transportation services under its own contracts and release the contracts to a qualified asset

manager that utilizes the transportation capacity for its own account unless called upon by the generator.

While these mechanisms to acquire and manage transportation capacity and services work most of the time, this cannot be assured during periods of peak demand. If the contracted services are interruptible and not firm, any of those services can be interrupted. In addition, temporarily released capacity, or managed capacity in the case of an asset manager, can be recalled by the original contracting shipper to serve its firm natural gas transportation needs.

In on-going debates about the interdependencies of the natural gas markets and electric generation, it is important to understand these most basic concepts of "firm" and "interruptible" capacity. While regulatory activity to date has focused on communication between natural gas pipelines and electric transmission operators and on opportunities to optimize natural gas and electric power scheduling, these initiatives fail to address the fundamental questions that are at the heart of the natural gas/electric power interdependency debate: namely, is there adequate natural gas pipeline infrastructure to serve the needs of electric generators and, if additional infrastructure is needed, are there the incentives and the means for generators (or others acting on their behalf) to contract for service using those pipelines.

It is also important to recognize that interstate natural gas pipelines serve multiple customers including: local distribution companies, which serve residential, commercial, manufacturing as well as local electric generators, and direct service industrial, commercial and electric generation customers. It is critical for electric generators, electric transmission operators and regulators to understand that interstate pipelines serve several types of customers each of which has its own load profile and operating characteristics. Because of the pipeline's broad "obligation to serve" all of its customers under the terms of the services they have contracted, it

is important for electric generators (or some entity acting on their behalf in certain markets) to acquire the correct portfolio of natural gas services. Thus, it is critical that a generator, and any regional transmission operator, pay attention to whether its market is capacity constrained or whether it has excess capacity when determining how to line up reliable fuel supplies for the generation needs of the state or region. The transportation services will be there if properly planned and if the economic structure is in place to finance the facilities necessary to provide the services.

A market that obviously is capacity constrained, yet increasingly reliant upon natural gas as the fuel of choice for electric generation, is the northeast generally and New England specifically. Several pipelines are attempting to develop significant additional pipeline capacity into the region. As noted above, these projects are capital intensive and subject to significant development risk. Despite record high commodity prices at peak periods in this region, the structure of the electric market presents contracting hurdles that discourage many of the region's generators from signing the firm transportation contracts needed to anchor the construction and operation of additional pipeline capacity into the region.

Midstream Infrastructure Requirements to 2035

We agree that the U.S. needs new pipeline infrastructure, and indeed not only for natural gas transportation but also for natural gas liquids, crude oil and refined petroleum products. The INGAA Foundation, an affiliated entity, has sponsored assessments of the need for new pipeline infrastructure for more than 15 years. These assessments have projected such needs looking forward approximately 20 years. In 2011, the Foundation expanded its assessment to include not only natural gas midstream assets but also crude oil and natural gas liquids. The INGAA

Foundation released its new assessment of U.S. and Canadian midstream infrastructure requirements through 2035 in March 2014.[3]

The report estimates that between 2014 and 2035 natural gas capital expenditures for midstream infrastructure will amount to $313.1 billion (inclusive of $43.7 billion of LNG export facilities) with an average annual expenditure of $14.2 billion (inclusive of $2.0 billion of LNG export facilities) in 2012 dollars. It is anticipated that the majority of these expenditures and capacity additions will occur in the next decade. Included in these expenditures are additions to gas transmission mainlines of $87.2 billion ($4.0 billion annual average); laterals to/from power plants, gas storage and processing facilities of $45.2 billion ($2.1 billion annual average) as well as other significant investments in field equipment, gathering, processing and storage facilities.

Natural Gas Capital Expenditures

(Billions of Real Dollars)	2014-2035 (2012$)	Average Annual (2012$)
Gas Transmission Mainline Pipe	$87.2	$4.0
Laterals to/from Power Plants, Gas Storage and Processing Plants	$45.2	$2.1
Gathering Line (pipe only)	$35.6	$1.6
Gas Gathering Line Compression	$23.5	$1.1
Gas Lease Equipment	$26.9	$1.2
Gas Pipeline & Storage Compression	$11.6	$0.5
Gas Storage Fields	$12.0	$0.5
Gas Processing Capacity	$27.4	$1.2
LNG Export Facilities	$43.7	$2.0
Total Capital Expenditures	**$313.1**	**$14.2**

With respect to large diameter natural gas transmission pipeline (greater than 16 inch), the report concludes that by 2020 the United States will need approximately 7,500 miles of additional large diameter pipeline and associated facilities. Between 2014 and 2025, the estimate

[3] INGAA has submitted a copy of the full INGAA Foundation report into the record of the QER proceedings.

for similar diameter natural gas transmission pipe is almost 12,000 miles. The estimate of large diameter transmission pipeline required through 2035 increases to 20,300 miles.[4] Spending for natural gas transmission lines must remain strong, estimated at $87.2 billion, in order to keep pace with the need to link new supplies to markets.

The assessment, however, projects a greater need for shorter, regional pipelines that connect supply to existing infrastructure rather than the historic trend weighted more heavily towards new, long distance pipelines. For example, there will be significant demand for systems to carry new natural gas supplies from Pennsylvania and West Virginia to nearby markets in New York and New England where demand for natural gas to fuel electricity generators is expected to continue to grow. There also will be demand for pipeline capacity to export such production to other regions; in many cases, this will involve redirecting the flow on pipelines that formerly delivered natural gas to such markets.

The report also forecasts the need for significant investment in midstream petroleum **[$271.8B]** and natural gas liquids **[$56.0B]** infrastructure. The main driver for such infrastructure is the dramatic growth in U.S. oil production and so-called "rich gas" that has entrained heavier hydrocarbons.

Need for New Pipelines

We recognize, and our data supports, the conclusion that new natural gas transmission pipelines will be needed to keep pace with the rapid development of new natural gas resources and the increase in natural gas demand. Two things are necessary for this infrastructure development to be possible. The first is proper market signals for new capacity. In most regions, this is not a problem. Shippers negotiate contracts for firm pipeline capacity on proposed

[4] These estimates are inclusive of Alaska and offshore pipe as well.

projects, and if enough capacity is contracted, a pipeline project stands a reasonable chance of moving forward. Regions with restructured electricity markets, however, present real challenges. This is especially the case when such markets are capacity constrained and rely heavily on natural gas-fired electricity generators. As noted already, New England is the prime example. INGAA and its members have encouraged the regional stakeholders to take steps that will create appropriate funding mechanisms to encourage market participants to execute the necessary transportation contracts.

Recent initiatives undertaken by the New England states' governors are promising. The so-called NESCOE initiative coupled with on-going efforts of the New England ISO are promising. In addition, the State of Maine has enacted legislation to examine whether the State of Maine should facilitate the signing of firm contracts in support of new capacity into the state with an on-going proceeding. These extraordinary initiatives underscore what is obvious: the region requires significant new natural gas transportation capacity not just for electric generation but also to bring competitive energy prices to all consumers in New England. Study after study has concluded that the region is pipeline capacity short. Still, New England has far to go in resolving the transmission capacity shortage that has caused its consumers to pay such a premium for natural gas and electricity.

Indeed, it has been demonstrated that natural gas basis differentials (the difference in the price of natural gas between two locations) are reduced when new pipelines remove bottlenecks between regions. This happened in much of the country when significant new pipeline capacity was added during the decade from 2004 through 2013. Consequently, other regions do not face this mismatch of demand and supply for natural gas supplies or infrastructure.

An interesting contrast is presented by the circumstances presented by Florida. Clearly, like New England, the Florida peninsula is also "at the end of the pipeline system," and is heavily dependent on natural gas for power generation. But Florida has not experienced the same problem getting adequate pipeline capacity built. In contrast to the so-called "organized markets," the local electric utilities have the ability and the regulatory certainty from the Florida Public Service Commission to contract for firm pipeline service. This support from state regulators, and the ability to recover the cost associated with ensuring reliability in electric generation, permits the construction and operation of the needed transmission infrastructure.

ADEQUATE PIPELINE INFRASTRUCTURE FACILITATES ADDITIONAL LOAD MANAGEMENT SERVICES

The presence of increased pipeline capacity, associated compression and upstream pipeline interconnects provides additional supply alternatives that serve as "shock absorbers" when there is a rapid change in gas demand. In addition to the obvious benefit of reduced market prices for transportation services, lower commodity prices and increased reliability, adequate pipeline capacity permits the development of supply management tools including park and loan services; line pack services; and additional nomination and scheduling services such as balancing services, hourly capacity services and non-ratable takes without the potential of penalties or detrimental system impacts.

There is no question that the member companies of INGAA, together with their customers, know how to provide reliable, cost effective transportation services. The market has performed for decades and decades. Over the last several decades, beginning in the mid-1980s, the pipeline industry has transformed itself with the assistance and at the urging of its regulators. This has resulted in increasingly creative service offerings in response to the needs of the pipelines' varied customers, including local distribution companies, directly served industrial

loads, electric generators whether base load or peaking facilities and intermittent renewable providers.

The interstate pipeline industry is also capable of modifying its systems and tariffs when prudent to add or adjust nomination cycles to better serve its customers. While the steel may stay in one place, the complete interstate pipeline grid is flexible as well as economically and operationally efficient. The industry and its service offerings benefit from technological advancements and the development of new, creative solutions. This includes working with our electric generation customers in all types of markets including bi-lateral, franchised, and regulated markets, co-ops, and regional transmission grids. The interstate pipeline community must serve all of its customers – not just electric generators – and is absolutely confident that it will continue to do so reliably, efficiently and at good value.

I would be remiss however if I did not mention the need for continuing leadership at all levels of government: federal, state and local, in support of new energy infrastructure and the timely permitting of new facilities. Federal permitting authorities need to be acting consistently and with purpose if we are to make the development and consumption of our nation's reliable and cost-competitive domestic energy resources a priority. More must be done to establish clear National goals and to coordinate the constructive participation by resource agencies (other than energy-focused agencies such as DOE and FERC). Other resource agencies should exhibit more positive and timely coordination with the infrastructure priorities established by energy, environmental and economic policies than is currently the case. INGAA welcomes the opportunity to continue this dialogue in future deliberations of the QER initiative.