OIL AND GAS PIPELINE INFRASTRUCTURE AND THE ECONOMIC, SAFETY, ENVIRONMENTAL, PERMITTING, CONSTRUCTION, AND MAINTENANCE CONSIDERATIONS ASSOCIATED WITH THAT INFRASTRUCTURE

HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED FOURTEENTH CONGRESS
SECOND SESSION

JUNE 14, 2016

Printed for the use of the Committee on Energy and Natural Resources


U.S. GOVERNMENT PUBLISHING OFFICE
WASHINGTON : 2017
# CONTENTS

## OPENING STATEMENTS

<table>
<thead>
<tr>
<th>Witness</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murkowski, Hon. Lisa, Chairman and a U.S. Senator from Alaska</td>
<td>1</td>
</tr>
<tr>
<td>Cantwell, Hon. Maria, Ranking Member and a U.S. Senator from Washington</td>
<td>2</td>
</tr>
</tbody>
</table>

## WITNESSES

<table>
<thead>
<tr>
<th>Witness</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black, Andrew, President and CEO, Association of Oil Pipe Lines (AOPL)</td>
<td>4</td>
</tr>
<tr>
<td>Eisenberg, Ross, Vice President, Energy and Resources Policy, National Association of Manufacturers (NAM)</td>
<td>11</td>
</tr>
<tr>
<td>McGarvey, Sean, President, North America’s Building Trades Unions</td>
<td>21</td>
</tr>
<tr>
<td>Parfomak, Dr. Paul, Specialist in Energy and Infrastructure Policy, Congressional Research Service (CRS)</td>
<td>28</td>
</tr>
<tr>
<td>Peress, N. Jonathan, Director of Air Policy, Environmental Defense Fund (EDF)</td>
<td>33</td>
</tr>
</tbody>
</table>

---

## ALPHABETICAL LISTING AND APPENDIX MATERIAL SUBMITTED

- **American Gas Association:**
  - Letter for the Record ................................................................. 106

- **American Petroleum Institute:**
  - Statement for the Record ............................................................. 113
  - Supplemental Statement for the Record ........................................... 115

- **Black, Andrew:**
  - Opening Statement .......................................................................... 4
  - Written Testimony ........................................................................... 7
  - Responses to Questions for the Record ............................................ 75

- **Cantwell, Hon. Maria:**
  - Opening Statement .......................................................................... 2

- **Eisenberg, Ross:**
  - Opening Statement .......................................................................... 11
  - Written Testimony ........................................................................... 14
  - Response to Question from Senator Franken .................................... 63

- **Interstate Natural Gas Association of America:**
  - Letter for the Record ...................................................................... 120

- **McGarvey, Sean:**
  - Opening Statement .......................................................................... 21
  - Written Testimony ........................................................................... 24

- **Murkowski, Hon. Lisa:**
  - Opening Statement .......................................................................... 1

- **Parfomak, Dr. Paul:**
  - Opening Statement .......................................................................... 28
  - Written Testimony ........................................................................... 30

- **Peress, N. Jonathan:**
  - Opening Statement .......................................................................... 33
  - Written Testimony ........................................................................... 35
  - Responses to Questions for the Record ............................................ 77
  - Supplemental Letter for the Record .................................................. 125

- **Stupp Corporation:**
  - Statement for the Record ................................................................ 129

- **(The) Williams Companies, Inc.:**
  - Statement for the Record ................................................................ 132
OIL AND GAS PIPELINE INFRASTRUCTURE
AND THE ECONOMIC, SAFETY, ENVIRONMENTAL, PERMITTING, CONSTRUCTION, AND MAINTENANCE CONSIDERATIONS ASSOCIATED WITH THAT INFRASTRUCTURE

TUESDAY, JUNE 14, 2016

U.S. Senate,
Committee on Energy and Natural Resources,
Washington, DC.

The Committee met, pursuant to notice, at 10:09 a.m. in Room SD–366, Dirksen Senate Office Building, Hon. Lisa Murkowski, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. LISA MURKOWSKI,
U.S. Senator from Alaska

The CHAIRMAN. Good morning, everyone.
The Committee will come to order so we can begin our oversight hearing this morning on our nation’s oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction and maintenance considerations that are associated with it.

Infrastructure is one of those things that everybody claims to be in favor of. We all support infrastructure. Who could be against it? It is only when you get down to the details of where that infrastructure is located, what the infrastructure will be transporting and how that infrastructure will be built—that is where you run into the controversy.

In the world of oil and gas pipelines, known in the industry as the midstream, this is actually not a complicated question. At point A, you have the immense resources, whether it is places like the NPRA, the non-wilderness portion of ANWR, in the Bakken, in the Marcellus or in the Eagle Ford. At point B, you have the refineries. You have the chemical facilities, the power plants and other consumers. The infrastructure that we will be hearing about today is necessary to move the resources from point A to point B.

It is pretty simple. Without infrastructure we cannot move these vital resources from one place to another. While some would contend otherwise, we know for a fact that pipelines are the safest and the most efficient way to move these resources.

In the world of economics, experts debate about direct impacts, indirect impacts and induced impacts. We know that pipelines directly create jobs in their construction, maintenance and operation, and we know that these are good jobs. We also know that pipelines
indirectly create jobs because it is a materials intensive industries. These are also good jobs. We also know that all of this induces economic growth and additional job creation.

So I am big into bumper stickers and trying to distill down all that we do here in Washington into some simplistic notions. If we have got to place a bumper sticker here this morning, it is that “Jobs are good, energy is good and energy jobs are great!”

In Alaska we are very proud of an infrastructure network known as the Trans-Alaska Pipeline System, or TAPS. The system stretches 800 miles, runs across all sorts of terrains, two mountain ranges, huge mountain ranges, from Prudhoe Bay down to Valdez. An estimated 70,000 people helped build this pipeline from 1969 to 1977 with the actual construction phase taking just over three years. I cannot overstate the positive impact this project has had on the State of Alaska. Without it, I can tell you for a fact we would not be able to fund our state’s government.

Energy is the lifeblood of our state. We have to continue to fight to boost the throughput of that pipeline which is vital to the energy security of this country, particularly the West Coast where the refineries are optimized to process North Slope crude.

TAPS, in many ways, I refer to as the gold standard. And I question, honestly, whether or not we could build it today. Certainly not in three years as we were able to do four decades ago.

We know new infrastructure is still the best way to deliver affordable energy to places that need it. We know the pipeline permitting process should be streamlined, yet those who opposed to building oil and gas infrastructure, often the same people, likely to be up in arms when prices get too high or service quality suffers.

I think we have got some cognizant dissonance here. How we can expect affordable energy if we cannot move the energy? You have to be able to move it.

Since I released my Energy 20/20 Blueprint in 2013 and follow on white papers on energy insecurity, the power grid, exports and the energy/water nexus, I have emphasized five principals that our nation’s energy policy should embody. They are pretty simple. Energy needs to be affordable, abundant, clean, diverse and secure. Infrastructure is really at the heart of all five of those principals. Without proper infrastructure, energy will be unnecessarily unaffordable. It will be scarce. It could be dirty, limited and insecure.

So as we welcome today’s witnesses and begin this hearing, I will tell you all to look for more from this Committee on these issues in the upcoming future.

With that, I turn to Ranking Member Cantwell, for your comments and I appreciate your work in getting us here as well.

Thank you.

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator Cantwell. Thank you.

Thank you, Madam Chair and thank you for holding this hearing and to our witnesses today for talking about issues associated with natural gas and oil pipelines.
Domestic production of natural gas and oil has reached record levels, and this increased production requires a network of pipelines and other modes of transportation to ensure that natural gas and oil can be moved from the point of extraction to the point of consumption. In many instances, new pipelines will be required.

But it is also important to note that we are talking about transporting toxic, highly flammable materials hundreds, if not thousands of miles across the United States. So new pipelines must meet Federal and state standards so that the public health and safety can be addressed.

We can always look to improve the efficiency of the pipeline siting process, but we have to remember not to take shortcuts.

The Senate Energy bill attempts to enhance the coordination between FERC and other Federal agencies with responsibility for issuing permits before a new pipeline is built.

In contrast, the House bill passed proposed to give FERC just 90 days to make a final decision on permit applications no matter the complexity of the proposed pipeline or the potential impact on people and the environment. This is something that we cannot do.

In addition to the potential impacts to public health and safety, leaks of methane from natural gas and oil pipelines can also have a dramatic impact on our climate. In the first two decades after methane is released into the environment, it is 84 times more potent as a greenhouse gas than carbon dioxide. The recent leak at the Aliso Canyon Natural Gas Storage Project in California is estimated to have caused more damage to the environment than any other leak in gas history. The project emitted more greenhouse gases than even the Deep Water Horizon explosion in the Gulf of Mexico.

Most new interstate natural gas pipelines require multi-billion dollar investments. These investments are recovered through rates charged to consumers signing on to long-term contracts. Obviously I am concerned that these multi-year contracts may delay the transition to non-fossil fuel alternatives.

Natural gas is a very important bridge fuel helping to reduce our reliance on coal while bringing online greater amounts of intermittent renewable energy such as wind and solar power. We are in the middle of a revolution and advances are made every day in technologies, the way that we can create and use energy, that will further reduce the demand for fossil fuels.

We undoubtedly will need some traditional natural gas capacity. I have often mentioned to the Chair my interest in support of a natural gas pipeline in Alaska. But as the Department of Energy Quadrennial Review suggests, we should focus on using existing pipelines more efficiently and making sure that the certificate process for new pipelines explores better ways to utilize existing capacity and mitigate issues and make sure that we are making the right decisions.

I want to mention, because of the health and safety issues, we were unfortunate enough on June 10th, 1999 to have a gas line explosion in Bellingham, Washington killing three children who were playing in Whatcom Creek. We have made some improvements in pipeline safety, but we can never forget the importance of these issues as we continue to move forward on this.
I look forward to hearing what the witnesses have to say today, Madam Chair, and look forward to our discussion.

The CHAIRMAN. Thank you, Senator Cantwell.

Again, welcome to the witnesses. We appreciate you making the effort to be with us today and for what you will contribute to the conversation.

We will lead off this morning with Mr. Andrew Black, who is the President of the Association of Oil Pipe Lines. He will be followed by Mr. Ross Eisenberg, the Vice President of the National Association of Manufacturers. Mr. Sean McGarvey is with us as President of the North American Building Trades Union, welcome. Dr. Paul Parfomak is the Specialist at the Congressional Research Service, CRS. Mr. Jonathan Peress will wind up the panel. He is the Air Policy Director for Natural Gas at the Environmental Defense Fund. We welcome all of you this morning and thank you.

I will let colleagues know that we are scheduled to have a vote at 11 o’clock, so hopefully our witnesses will be able to get through all of their testimony prior to that time. It may be that we jump up, go take a vote and then come back to ask questions.

With that, Mr. Black, if you would like to lead off and welcome.

STATEMENT OF ANDREW BLACK, PRESIDENT AND CEO, ASSOCIATION OF OIL PIPE LINES (AOPL)

Mr. Black. Thank you, Madam Chair, Senators.

The Association of Oil Pipe Lines represents transmission pipeline operators who deliver crude oil, refined products like gasoline, diesel fuel and jet fuel and natural gas liquids such as propane and ethane.

The U.S. pipeline network plays a critical role in delivering energy needed by American workers and families. Pipelines help American drivers get the gasoline and diesel fuel they need to drive their cars and trucks. Propane delivered by pipeline allows farmers to dry crops and warm livestock barns and is essential to heating millions of homes.

American workers rely upon pipelines to deliver the raw material feedstocks needed for good paying, manufacturing jobs. Just last week Shell Chemical announced it will build a multi-billion dollar petrochemical plant in Pennsylvania. That new plant turning raw ethane into polyethylene will employ 6,000 workers in construction, 600 permanent plant workers and provide economic benefits for the entire region. This is made possible by a liquids pipeline delivering 100,000 barrels per day of ethane to the plant.

Pipeline operation also supports other good paying jobs. The TransAlaska Pipeline System, for example, employs 2,500 men and women delivering crude oil to world markets. Alaska’s oil and gas production, much of it delivered at some point by pipeline, provides 110,000 Alaska jobs and supports one third of Alaska’s work force.

Pipelines are an exceedingly safe way to deliver the energy America needs. A barrel of crude oil petroleum products reaches its destination safely greater than 99.999 percent of the time.

Liquid energy pipelines are also getting safer. Since the year 2000, pipeline incidents impacting the public or environment are down 55 percent. Since 2000, corrosion-caused incidents are down over 70 percent.
Pipeline safety is spurred by a combination of government regulation and industry-wide safety improvement efforts. The U.S. Pipeline and Hazardous Materials Safety Administration, or PHMSA, contributes to pipeline safety by providing minimum pipeline safety standards, accountability for pipeline safety shortfalls and an independent source of pipeline safety.

PHMSA is proposing and finalizing several new pipeline safety regulations. Last summer PHMSA proposed a new Federal rule raising training requirements for pipeline personnel performing pipeline safety related tasks and details on a new requirement for prompt notification to authorities of pipeline incidents.

Last fall, PHMSA proposed a large set of new regulations on liquid pipeline systems to expand inspections of pipelines after extreme weather events, expand the number of pipeline segments requiring intensive inspection, shorten timelines for performing pipeline maintenance and expand requirements for pipeline leak detection.

Congress has taken action to improve pipeline safety by increasing funding for over 100 new PHMSA personnel, many of them for inspections and enforcement.

Congress also, just within the last few days or hours, passed new pipeline, bipartisan safety regulations. The Pipes Act, passed by the House last week and the Senate last night, will ensure pipeline operators receive timely, post inspection information from the government. Thank you to Senator Daines for inspiring that, to allow them to maintain and improve their safety efforts. It will ensure that product composition information is quickly provided to first responders after an incident and improved protection of coastal areas, marine waters and the Great Lakes. The bill was passed in large part on legislation passed by the Senate in March and negotiated in advance with Senate Republican and Democratic staff, along with their House counterparts. AOPL thanks the Senate for adopting this bipartisan bill last night.

Even though pipelines are one of the safest modes of energy transportation, the pipeline industry believes it is important we are proactively improving pipeline safety further and have set a goal of zero incidents. Through the AOPL and American Petroleum Institutes’ pipeline safety excellence initiative, pipeline operators have engaged nearly a dozen industry-wide groups to improve pipeline operations and safety. Together we’re funding research and development on pipeline inspection technologies, enhancing our threat detection and response capabilities, expanding safety culture and management systems and boosting our response capabilities.

Last year liquid pipeline operators developed industry-wide programs to improve our ability to detect cracking, integrate safety data, manage safety efforts holistically, manage leak detection programs and better plan for and respond to pipeline emergencies.

This year we will complete a new program for comprehensive management systems, complete expansion of industry-wide guidance on river crossings, develop a new recommended practice for construction quality management and update our recommended practice for pipeline inspection and preventative maintenance.
As you can see, there’s a lot going on to improve pipeline safety, and pipelines continue to provide benefits to American workers and consumers.
Thank you.
[The prepared statement of Mr. Black follows:]
Written Testimony of
Andrew J. Black, President and CEO, Association of Oil Pipe Lines (AOPL)

U.S. Senate Committee on Energy & Natural Resources
Hearing to examine oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction, and maintenance considerations associated with that infrastructure

June 14, 2016

Thank you. I am Andy Black, President and CEO of the Association of Oil Pipe Lines (AOPL). AOPL represents transmission pipeline owners and operators who deliver crude oil, refined products like gasoline, diesel fuel and jet fuel, and natural gas liquids such as propane and ethane.

Our U.S. pipeline network extends over 199,000 miles throughout the country delivering over 16 billion barrels of crude oil and petroleum products annually. Crude oil pipelines stretch nearly 67,000 miles delivering crude oil from production areas and import terminals to refineries around the nation. Refined products pipelines cover 61,000 miles delivering jet fuel to airports and gasoline and diesel to regional terminals where trucks pick it up and deliver transportation fuels to local gas stations. Natural gas liquids pipelines travel over 65,000 miles delivering industrial raw materials, such as ethane, from production areas to manufacturers and propane to farmers and consumers.

The U.S. pipeline network plays a critical role in delivering energy needed by American workers and families. Without pipelines, American drivers cannot get the gasoline and diesel fuel they need to drive their cars and trucks to commute to work or drive on the job. Propane delivered by pipeline allows farmers throughout the heartland to dry their grain production and keep their livestock barns warm in the winter. Propane delivered by pipeline is also essential to heating millions of homes in rural America.

American workers rely upon pipelines to deliver the raw material feedstocks needed for good-paying manufacturing jobs in plastics, chemicals, fabrics and pharmaceuticals. Ethane is produced as a by-product of crude oil or natural gas production. Plentiful, low-priced ethane production has fueled an industrial renaissance in America with billions of dollars in investment building new petrochemical plants and creating new jobs.

A recent example of energy and pipelines bringing manufacturing jobs to American workers is Shell Chemical’s announcement last week to build a multi-billion dollar petrochemical plant in Pennsylvania northwest of Pittsburgh. The project will employ 6,000 workers building the facility and provide 500 workers permanent jobs at the plant. Thousands more in surrounding communities will benefit from the payroll spending and economic activity
needed to support workers at the plant. None of that could happen without pipelines capable of delivering over 100,000 barrels of ethane per day from the nearby Marcellus shale gas fields to the plant.

In addition to pipelines supporting good-paying manufacturing jobs, pipeline construction also creates jobs. A recent government analysis found a proposed major pipeline project would provide over 42,000 U.S. jobs and $2.1 billion in U.S. worker payroll. While the pipeline would support 6,800 construction jobs with $420 million in payroll, it would also lead to 4,600 manufacturing jobs with $309 million in payroll, 4,400 jobs in trade with $172 million in payroll, 2,200 jobs in finance and insurance with $131 million in payroll, 5,100 jobs in other professional services with $343 million in payroll, 2,700 jobs in health services with $141 million in payroll, and 5,700 jobs in food and accommodations with $278 million in payroll.

Pipeline operation also supports good-paying jobs. As an example, the Trans-Alaska Pipeline System (TAPS) supports a workforce of 2,500 men and women operating an 800-mile pipeline, a dozen pump stations, and a marine terminal. According to the Alaska Oil and Gas Association, in 2013, oil and gas production provided 5,300 direct jobs in Alaska with $780 million in wages. Direct, indirect and induced jobs related to oil and gas production accounted for 51,000 jobs and $3.5 billion in wages. Oil and gas taxes and royalties spurred another 65,000 jobs and $6.4 billion in wages. In total, the petroleum industry supports over 110,000 jobs or one-third of all jobs in Alaska. Most of this would not be possible without pipelines like TAPS delivering crude oil from production to market. While doing this, TAPS provides the crude oil that supports millions of American consumers and workers on the Lower 48 West Coast.

In addition to economic benefits of jobs and wages provided or facilitated by pipelines, pipelines are an exceedingly safe way to deliver the energy America needs. A barrel of crude oil or petroleum products reaches its destination safely 99.999 percent of the time. Liquid energy pipelines are also getting safer. Since the year 2000, pipeline incidents impacting the public or environment are down 55 percent. Since 2000, corrosion caused incidents are down over 70 percent.

Government pipeline safety regulations contribute to pipeline safety. Regulations issued by the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA) provide the benefits of requiring minimum pipeline safety standards, accountability for pipeline safety shortfalls and a trusted, independent source of pipeline safety. We will always want regulations to be reasonable, thoughtful and cost-effective. But we also benefit when the public understands the government is watching over pipeline operators and deterring pipeline violations.

Current PHMSA pipeline safety regulations also address the need for proactive safety actions to prevent pipeline incidents before they occur. So-called pipeline integrity management regulations require pipeline operators to regularly inspect their pipelines and perform preventative maintenance on issues they may find long before they are able to grow into problems. This program of proactive prevention of pipeline incidents is largely responsible for the 70 percent drop in corrosion incidents. It also addresses a key public desire to see pipeline operators proactively addressing pipeline safety. Each year, pipeline operators spend over $2 billion to evaluate, maintain and perform preventative maintenance on their pipelines.
It is also important for the government to be responsive to pipeline problems that crop up from time to time. Indeed, PHMSA is in the midst of proposing and finalizing several new pipeline safety regulations. Last summer, PHMSA proposed a new federal rule raising training requirements for pipeline personnel performing pipeline safety-related tasks. They also provided details on a new requirement for prompt notification to authorities of pipeline incidents.

Last fall, PHMSA proposed a large set of new regulations on liquids pipeline operators. The new rules would expand inspections of pipelines after extreme weather events, expand the number of pipeline segments requiring intensive inspection, shorten timelines for performing pipeline maintenance and expand requirements for pipeline leak detection. This spring, PHMSA proposed a similar set of new regulations for natural gas pipeline operators.

We have Congress to thank for both the direction to PHMSA to issue these requirements and oversight of PHMSA to ensure it completes its legislative mandates. Congress has also taken action to improve pipeline safety by increasing funding at PHMSA. In FY 2015, Congress funded over 100 new PHMSA personnel, many of them inspectors and enforcement personnel. This action represented bipartisan agreement to provide PHMSA additional resources to perform its pipeline safety mission.

Congress is also joining to pass new, bipartisan federal pipeline safety legislation. Last week, the House of Representatives passed by voice vote legislation reauthorizing federal pipeline safety programs. Negotiated and supported by both Republican and Democratic members, the Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016, or PIPES Act of 2016, will ensure pipeline operators receive timely post-inspection information from the government to allow them to maintain and improve their safety efforts, increases inspection requirements for certain underwater oil pipelines to enhance safety, ensures that product composition information is quickly provided to first responders after an incident and improves protection of coastal areas, marine coastal waters, and the Great Lakes by explicitly designating them as unusually environmentally sensitive to pipeline failures.

The PIPES Act was based in large part on legislation passed by the Senate in March and was negotiated in advance with Senate Republican and Democratic staff along with their House counterparts. AOPL urges Senate adoption of this bipartisan pipeline safety bill.

While statutory and regulatory requirements for pipeline safety are important, the pipeline industry believes it is important we are proactively improving pipeline safety. Even though pipelines are one of the safest modes of energy transportation, as a pipeline industry we have established our ultimate goal at zero pipeline incidents. Pipeline incidents compared to the amount of product we deliver may be rare, but we continue to develop new ways to improve pipeline safety.

In 2014, pipeline member companies of AOPL and the American Petroleum Institute launched the Pipeline Safety Excellence initiative. This comprehensive safety effort embodies the work of nearly a dozen industry-wide pipeline groups to improve pipeline operations and safety. Together, we are funding research and development on pipeline inspection technologies, enhancing our threat detection and response capabilities, expanding safety culture and management systems, and boosting our response capabilities.
In 2015, liquids pipeline operators completed development of a number of industry-wide programs to improve our ability to detect pipeline cracking, integrate safety data, manage safety efforts holistically, manage leak detection programs and better plan for and respond to pipeline emergencies.

2016 marks the two-year anniversary of our new pipeline specific training program for first responders. Small and rural fire departments, many of them staffed by volunteers, told us they sometimes do not have the time or resources for pipeline specific emergency response training. Liquids pipeline operators responded by developing a free, online training course for pipeline emergencies. Now first responders can go online anytime, whether they are on the day shift or night shift, working weekends or weekdays, from the firehouse or their own homes, to get the training they need to respond to a pipeline emergency.

For liquids pipeline operators, 2016 is a year of implementing newly developed safety programs industry-wide. A prime example is our effort to encourage and assist implementation of the American Petroleum Institute (API) 1173 Recommended Practice (RP) for Pipeline Safety Management Systems. Recommended by NTSB and developed in conjunction with PHMSA and state pipeline regulators, this program will help pipeline operators comprehensively and holistically manage all the safety efforts underway across a company. Other industry sectors such as aviation, nuclear power and chemical manufacturing have benefited from safety management systems. Now, pipeline operators will benefit too.

In addition to these implementation activities, pipeline operators within AOPL and API in 2016 will complete expansion of industry-wide guidance on river crossings, develop a new recommended practice for construction quality management, and update our industry-wide recommended practice for pipeline integrity program management, API RP 1160.

Many of these efforts have technical names such as recommended practices or technical reports. But the bottom line is we are learning the lessons of past experiences to make safety improvements. We are taking action in key safety areas of detecting leaks, using technology to inspect pipelines, better planning and training to respond to pipeline incidents, and proactively finding and fixing problems on pipelines before they result in an incident.

Through participation in these industry-wide safety improvement efforts, pipeline operators are proactively preventing pipeline incidents, protecting their pipelines with advanced technology, and have a plan and are prepared for a pipeline emergency should it occur. The result is an even safer network of liquids pipelines.

####
The CHAIRMAN. Thank you, Mr. Black.

Mr. Eisenberg.

STATEMENT OF ROSS EISENBERG, VICE PRESIDENT, ENERGY AND RESOURCES POLICY, NATIONAL ASSOCIATION OF MANUFACTURERS (NAM)

Mr. EISENBERG. Thank you, Madam Chair, Ranking Member Cantwell, members of the Committee for having the NAM here today to talk about pipelines and what they mean to manufacturing.

Our message today is simple and direct. Manufacturers' already high demand for oil and gas is going to increase dramatically over the next ten years, and we're going to need adequate pipeline infrastructure to ensure that the nation's ample supply of these resources are delivered efficiently, safely and securely to the manufacturers who need it.

What is uncertain is the amount of pipes and really the geographic distribution of the pipes to get the gas from point A to point B to the end users who need it. We're going to need a lot more of those.

Manufacturers use a third of the energy consumed in the United States. We've got—we've historically had an outsized reliance on oil and gas. Manufacturers use oil for fuel and as a feed stock and we use natural gas for a great many things, drying, melting, process cooling, machine drive and refrigeration, heating, ventilation, A/C, in boilers to produce steam and electricity and finally as a feed stock for refining chemicals in primary metal sectors.

Because of this reliance our members have asked us and we recently retained IHS Economists to examine our oil and gas pipeline needs and the challenges and opportunities that exist for manufacturers.

The challenges are what IHS calls a mismatch geographically in the growth in natural gas demand and supply in the U.S. lower 48. The rapid growth of low cost production out of the Marcellus and Utica plays has created a bottleneck as producers are unable to find pipeline capacity to move gas from the well to consumer markets.

IHS believes that some of the pipeline capacity can be achieved by re-engineering the existing pipelines and changing the ones that are coming in and turn them and make them go out so that that low cost gas can go to some of these regions. However, the potential for reversal of these pipelines is going to be exhausted at some point and we're still going to need to build more. The only way to do that is by committing to building new pipeline capacity.

And when pipelines aren't available manufacturers do suffer. The EPA's recent boiler MACT regulations, generally speaking, have forced most manufacturers to switch their boilers to natural gas. But several struggle to meet the boiler MACT imposed deadlines
because they have trouble getting authorization and approval to get the gas to their plants.

In the Northeastern United States, where this is happening, some manufacturers are basically having to turn to truck CNG to their facilities because they can’t get a pipeline which places them at a disadvantage relative to other places like the Gulf, who could just have the gas.

The opportunities, on the other hand, are significant. When pipelines are built it means jobs across the manufacturing supply chain. IHS estimates the construction of new natural gas transmission lines meant more than 347,000 jobs in 2015 with almost 60,000 of them manufacturing products like steel pipe, coatings, construction equipment, compressor motors, gauges and instruments and sand and gravel.

On the oil pipeline side, at least 66 different manufacturing sub-sectors benefited from the construction of crude oil pipelines in 2015 and these include iron and steel, fabricated metal, cement, machinery and paints and coatings.

As with most studies of the energy renaissance the numbers, the big numbers, are very, very big. Real GDP increased by $190 billion and 1.4 million more jobs in 2015 because of shale gas. The average family had about $1,300 in their pockets that they would not otherwise have had because of the shale renaissance.

But I’d like to spend a few minutes talking about the stories behind this which are really pretty remarkable in the manufacturing sector.

Stories like ACME Brick Company, the largest brick manufacturer in the U.S., with facilities in Minnesota, Arkansas, Oklahoma, Texas and Colorado. ACME produces a product that is heavy bricks, so moving natural gas via pipelines to where the bricks are made is far more efficient than moving the heavy bricks long distances.

CF Industries uses natural gas to make enough fertilizer to nourish ten percent of the corn planted nationally.

Covestro uses natural gas as a raw material to manufacture energy efficient products like polyurethane insulation.

UPS has more than 6,500 alternative fuel and advanced technology vehicles in operation, more than half of which operate on natural gas.

Caterpillar and CNH Industrial, they make the equipment to support the construction of the pipelines and the operation of them, but they also use natural gas as a fuel for their own operations.

And small manufacturers like Marble King in West Virginia, a 28-person manufacturer, and Biad Chili Company, a New Mexico manufacturer who grows and processes chili peppers. They credit local pipelines as their key to staying competitive in the face of growing international competition.

As our pipeline network grows so does manufacturing opportunity. It’s imperative that the oil and gas pipeline system keep pace with supply and demand growth. So much new capacity is going to be needed over the next decade that prolonged delays could cause major problems for manufacturers.

The NAM appreciates the attention this Committee is giving this issue and stands ready to support any efforts to ensure that pipe-
lines are built in a timely fashion to meet our sector's growing energy demand.

Thank you.

[The prepared statement of Mr. Eisenberg follows:]
TESTIMONY OF ROSS EISENBERG
VICE PRESIDENT, ENERGY AND RESOURCES POLICY
NATIONAL ASSOCIATION OF MANUFACTURERS

BEFORE THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

“Hearing to examine oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction and maintenance considerations associated with that infrastructure”

JUNE 14, 2016

Good morning, Chairman Murkowski, Ranking Member Cantwell and members of the Senate Committee on Energy and Natural Resources. My name is Ross Eisenberg, and I am vice president of energy and resources policy at the National Association of Manufacturers (NAM). The NAM is the nation’s largest industrial trade association, representing nearly 14,000 small, medium and large manufacturers in every industrial sector and in all 50 states. The NAM appreciates the opportunity to discuss oil and gas pipeline infrastructure and its importance to manufacturers today and in the future.

The NAM’s message today is simple and direct: manufacturers’ already high demand for oil and gas will increase dramatically over the next decade, and we will need adequate pipeline infrastructure to ensure that the nation’s ample supply of these resources are delivered efficiently, safely and securely to the end users who need it. Manufacturers appreciate the Committee’s attention to this topic and stand ready to support any efforts to ensure pipelines are built to meet our sector’s growing energy demand.

How Manufacturers Use Energy

Manufacturers are major energy consumers, using one-third of the energy consumed in the United States. As demonstrated by the chart below from the U.S. Energy Information Administration (EIA), manufacturers use all forms of energy, both as direct inputs and as sources of electricity generation. The NAM supports an “all-of-the-above” energy strategy that embraces all forms of domestic energy production, including oil, gas, coal, nuclear, energy efficiency, alternative fuels and renewable energy sources.
Two facts are immediately evident from the EIA chart above. First, manufacturers have an outsized reliance on oil and gas relative to all other energy sources. Second, after a decade of relatively stable natural gas demand, industrial consumption of natural gas has grown steadily since 2009 and is trending upward.

A great deal of research already exists showing America’s oil and gas abundance and its positive impact on manufacturing—several supported or commissioned by the NAM.\(^1\) Last year, urged by our members, our attention turned to oil and gas pipeline needs. We commissioned and released two studies from global research firm IHS Economics, one on oil pipelines\(^2\) and the other on natural gas pipelines.\(^3\) Together the studies examine the impact pipelines have on U.S. manufacturing growth and employment, not only from construction, operations and maintenance of the pipeline itself but also from the fuels carried by the pipelines used by manufacturers.

### NAM Study on Natural Gas and Natural Gas Pipelines

The relationship between natural gas and manufacturing is strong. Manufacturers use natural gas as a fuel for direct process uses, such as drying,
melting, process cooling, machine drive and refrigeration; as a fuel for direct non-process uses in manufacturing establishments, such as heating, ventilation, HVAC and lighting; as a fuel for indirect purposes, such as boilers used to produce electricity and steam; and as a feedstock in refining, chemicals and primary metals sectors. Domestic natural gas has transformed the U.S. economy, made our companies more competitive, created jobs and put money back in the pockets of working Americans.

However, the story does not end here. IHS forecasts that over the next decade, total demand for natural gas will increase by 40 percent. Key drivers will be manufacturing and power generation. At the same time, IHS forecasts U.S. supply of natural gas to grow by 48 percent, more than enough to meet growing demand. The uncertain part of the chain is the midstream infrastructure—the pipelines—and IHS concludes that we will need major investments in new pipeline infrastructure to ensure manufacturers have a steady, reliable stream of natural gas.

The NAM’s natural gas pipeline study features testimonials from manufacturers large and small, each of whom is benefitting from natural gas and natural gas pipelines. Here are several notable stories.

- **ACME Brick Company** is the largest brick manufacturer in the United States, making the bricks that build schools and homes across America for 125 years. ACME writes, “we produce a product that is heavy, so moving natural gas via pipelines to where the bricks are made is far more efficient than moving heavy bricks long distances.” For ACME, “[d]irect access to natural gas pipelines is vital to local production and environmental stewardship.”

- **Biad Chili Company**, a New Mexico-based grower and processor of chili peppers, including the famed Hatch green chiles, is investing in Presidio, Texas because of a new natural gas pipeline built near the town. For Biad, the pipeline is a game-changer for small manufacturers: “It’s the difference between whether or not our company is profitable or not profitable.”

- **Caterpillar** is both an energy user and supplier. They “rely on energy as we design, test and build our products,” and “Caterpillar machines also help build the pipelines, and our reciprocating engines, gas turbines and compressors are used to produce the gas and move it through pipelines to businesses and communities across America.”
- **CF Industries** partnered with Northern Natural Gas to construct a new pipeline in Nebraska and Iowa to bring natural gas safely and efficiently to CF Industries’ expanded plant site in Sergeant Bluff, Iowa. According to CF Industries, “[t]his will allow our site—located in America’s Corn Belt—to produce enough fertilizer to nourish more than 10 percent of the total area planted to corn nationally.”

- **CNH Industrial** designs, produces and sells “machines for work” such as tractors, combines and powertrain solutions for on and off road and marine. CNH Industrial writes, “[w]ithout natural gas and the pipeline infrastructure to access these energy resources, not only would our production and competitiveness be impacted, so would the 6,000 men and women who work on our shop floors. Energy and energy infrastructure like pipelines is essential to our businesses and success.”

- **Covestro** uses natural gas “both as a fuel source and a raw material to manufacture products that save far more energy than it takes to produce them.” Covestro writes, “our polyurethane insulation can significantly reduce a building’s energy consumption, while our lightweight polycarbonate increases fuel efficiency in vehicles, thereby reducing CO2 emissions.”

- **Marble King**, a 28-person small manufacturer based in Paden City, West Virginia, produces more than 1 million marbles per day and is one of the only marble manufacturers left in the United States. According to their president, Beri Fox, abundant supplies of natural gas help make this possible. She writes, “We’re a high-volume gas consumer, and when gas prices were off the charts, it was crazy—we couldn’t be competitive with China . . . Today, we can be more competitive and a lot of that is because of the lower gas costs.”

- **UPS** is a company whose core business depends on fuel to power its trucks. At the end of 2015, UPS had more than 6,500 alternative fuel and advanced technology vehicles in operation, a ground fleet that has traveled more than 500 million miles since 2000. More than half of that alternative fuel fleet operates on natural gas, which UPS began investing in during the 1980s. In 2014, all new tractor trailers that UPS purchased for its domestic, small-package delivery business ran on
natural gas. By year’s end, UPS had more than 1,000 compressed natural gas (CNG) medium “package cars” and 1,297 heavy tractors operating on liquefied natural gas (LNG) or CNG. UPS has also invested in more than 30 LNG and CNG fueling operations across 10 U.S. states, with planned additions in several others.

The economic value of natural gas to all Americans remains high. IHS estimates that as a result of the increase in domestic shale gas production, we saw real GDP increase by $190 billion and 1.4 million more jobs in 2015. That translates into more than $150 billion more in real disposable income, meaning the average American family had an extra $1,337 in disposable income because of shale gas.

For manufacturers, lower natural gas prices not only reduce the cost of purchasing natural gas for fuel but also contribute to less expensive electricity. IHS estimates that the combination of increased access to shale gas and the pipelines that deliver that affordable energy to manufacturers meant 1.9 million jobs in 2015 alone.

Total natural gas demand is poised to increase by 40 percent over the next decade—double the growth of the past 10 years. By improving technology and increasing productivity, supply growth continues at a strong pace despite falling prices for both gas and oil and significantly lower rig activity. But, according to IHS, “[t]here is a mismatch, geographically, in the growth in natural gas demand and supply in the U.S. lower 48.” The rapid growth of low-cost production out of the Marcellus and Utica plays has created a bottleneck, as producers are unable to find pipeline capacity to move gas from the well to consumer markets.

When pipeline access is not available, manufacturers suffer. Several NAM members, who were required to install natural gas boilers to meet the Environmental Protection Agency’s (EPA) recent Boiler MACT regulations, have struggled to meet the EPA’s deadlines because they were unsure they could gain timely approval for additional gas capacity. In the northeastern U.S., some manufacturers are forced to truck CNG to their facilities due to stiff local opposition to new pipelines; this imposes a significant competitive disadvantage on the manufacturer, who could have relatively easy natural gas access in other parts of the country.

IHS believes some of the pipeline capacity can be achieved by re-engineering existing pipelines that historically imported gas into the northeastern United States and reverse the flow, so that low-cost Appalachian gas could now
be sent to other regions. However, the potential for reversal of existing pipelines will be exhausted and further supply growth will still be necessary. The only way to meet this growth is construction of brand-new pipeline capacity.

Pipeline construction means more than just reliability and energy security. It generates manufacturing jobs across the supply chain for products such as steel pipe, coatings, construction equipment, compressor motors, gauges and instruments, sand and gravel. IHS estimates the construction of new natural gas transmission lines meant more than 347,000 jobs in 2015, with almost 60,000 of those in manufacturing. In all, construction of new pipelines and the operation and maintenance of the existing pipeline system in 2015 contributed nearly $50 billion in GDP to the U.S. economy.

**NAM Study on Oil Pipelines**

In 2015 and 2016, 13,252 miles of new crude oil transmission pipelines will have been constructed in the U.S. at a cost of $25.6 billion. This is on top of 61,379 miles of onshore crude oil pipelines operating in the U.S. at the end of 2014. These new pipelines are being constructed to take advantage of new domestic oil supplies.

Like natural gas pipelines, oil pipelines deliver a significant boost to manufacturers across the supply chain. IHS found that in 2015, construction and operation of crude oil pipelines created 207,000 jobs and contributed $21.8 billion to GDP. IHS further projects that oil pipelines will contribute 243,167 jobs in 2016, of which 28,438 will be in manufacturing, and $25.1 billion in GDP.

![U.S. Economic Impacts of Crude Oil Pipeline Construction and Operation in 2016](image)

Between 32 and 37 percent of the cost of constructing an oil pipeline is directly for manufacturing inputs. The major types of manufactured goods used include equipment, line pipe, fittings, coatings and booster stations, including pumps. As a result, at least 66 different manufacturing subsectors (out of 86 total) benefited from the construction of crude oil pipelines by $10 million or more in 2015. These include iron and steel, fabricated metals, cement, machinery and paints and coatings.
Conclusion and Recommendations

Manufacturers benefit from pipeline construction and maintenance. As our pipeline network grows, so does manufacturing opportunity. For this reason, it is imperative that the oil and gas pipeline system keep pace with supply and demand growth.

Like any infrastructure project, the permitting process for a pipeline can be daunting. Particularly for major interstate pipelines, navigating state and federal laws and regulations can take years—a timetable that only seems to be increasing. There are no shortage of issues that must be managed, including environmental, safety, and land use. All of these issues can and should be addressed quickly and efficiently.

When building an infrastructure project, time is the most valuable commodity. In the case of pipelines, so much new capacity will be needed over the next decade that prolonged delays could cause major problems for manufacturers. The NAM appreciates the attention this Committee is giving the issue of oil and gas pipelines and stands ready to support any efforts to ensure pipelines are built to meet our sector's growing energy demand.
Mr. McGarvey, welcome.

STATEMENT OF SEAN McGARVEY, PRESIDENT, NORTH AMERICA’S BUILDING TRADES UNIONS

Mr. McGarvey. Thank you, Madam Chair. It is an honor to join you today to discuss our nation’s energy infrastructure.

As many of you know North America’s Building Trades Unions is comprised of 14 national and international unions representing three million skilled craft professionals in the United States and Canada. On behalf of our members I welcome the opportunity to explain how our value-based business model and our world class training capacity play an integral role in the construction and maintenance of oil and gas infrastructure.

But our expertise and exposure to the energy industry does not end there. Building Trades members can be found working in extraction sites, power plants, carbon capture and sequestration facilities and export facilities. Currently we estimate that 50 percent of our membership is employed by energy-related industries.

I also wanted to take a moment to thank the members of this Committee on both sides of the aisle who have voted to retain prevailing wage protections in the construction industry. By helping safeguard these community standards and promoting training, we are protecting and preserving some of the few remaining occupations that cannot be outsourced to foreign countries or decimated by low road business models that are centered upon low wage, low skilled and easily exploitable workforce.

In any successful organization, labor or otherwise, being the best means setting high standards and maintaining and exceeding those standards.

We harbor no illusions that our success is predicated on anything other than delivering the safest, most highly trained and productive skilled craft work force found anywhere in the world. That’s why our rank and file members and our signatory contractors collectively fund, to the tune of roughly $1 billion a year, a nationwide network of 1,600 local joint labor management apprenticeship training programs, or JATCs. They are regulated by Department of Labor or State Apprenticeship Councils and they are governed by a Board of Trustees made up of equal numbers of contractors and labor representatives.

If the building trades system which includes both apprenticeship level and journeyman level training was a degree granting college or university, it would be the largest degree granting college or university in the United States, over five times larger than Arizona State University. If it was a K through 12 school district, it would be the fourth largest school district in the U.S., only behind New York, Los Angeles and Chicago. And there’s no taxpayer money involved in this system. Our members contribute a portion of their hourly wage, and our contractors contribute out of their own pockets.

We are successfully working with community leaders to leverage both public and private investments in capital construction projects to create structured career training opportunities for historically underserved communities such as women, minorities and veterans.
Through these efforts and others, we now boast over 100 pre-apprenticeship programs to ready students for the academic and real world challenges of being in a union apprenticeship program.

Specific to the topic of today’s hearing I want to highlight the International Union of Operating Engineers Pipeline Training Fund. Many of the work opportunities in the natural gas industry require specialization within the pipeline crafts. For example, most operating engineers run traditional heavy equipment such as bulldozers, backhoes and cranes and excavators. However, the pipeline industry has a unique set of skill requirements and the operating engineers maintain a robust training program in partnership with the Pipeline Contractors Association to meet the industry’s needs.

For example, during the natural gas renaissance, the OEs developed a new curriculum and course work in directional drilling to add to their existing pipe bending and pipe lifting classes, maintenance and rehabilitation in rock drilling classes. The OE currently offers more than 130 classes in different areas of the pipeline sector alone.

In real terms it means in right to work states like South Dakota specialized operating engineers average $35 an hour, and that means workers are able to provide for their families while receiving union provided health care and pension benefits. But it is not easy to make it—it’s not as easy as we make it sound.

Every single large energy project is subjected to years of regulatory environmental study. And to be sure, pipeline infrastructure has failed to keep pace with the increased production which has caused several regions of the country to experience shortages and severe price spikes.

New England is a perfect example of how the lack of sufficient pipeline infrastructure can have an adverse effect on both businesses and consumers. In 2000 only 15 percent of New England’s electric generation was from natural gas fuel-power plants. By 2015 that number was nearly 50 percent but the pipelines need to feed these plants with natural gas, presumably from the Marcellus shale region, had not kept pace. It isn’t for lack of trying.

Less than two months ago New York State denied the Constitution pipeline after it had already received FERC approval and the company had been working with the state for three years to mitigate environmental concerns. The permit denial will delay about 2,400 direct and indirect jobs that will be created during pipeline construction generating $130 million in labor income for the region. That decision could also cost local governments approximately $13 million in annual property tax revenue.

Other recent delays which have essentially put the pipeline industry into a tail spin include the Jordan Cove LNG export terminal and associated gas pipeline was rejected by FERC in March and then granted a rehearing; in April Kinder Morgan’s withdrawal of the Northeast Energy Direct Pipeline application with FERC due to opposition; the New Jersey Department of Environmental Protection’s review of the final section of the Transco Leidy Pipeline is significantly delayed due to pending litigation; the Dakota Pipeline received revocation of its permit from the U.S. Fish and Wildlife Services; the Rover Pipeline from the Marcellus shale region to the Midwest continues its lethargic approval process; and
Dominion’s Atlantic Coast Pipeline route has been rerouted a number of times to address concerns.

The bottom line is that pipelines are the safest mode of transporting natural gas and the U.S. Department of Transportation’s statistics show that underground pipelines transport natural gas far more safely than ships, rail cars or trucks. All the major pipelines I listed above will employ the most advanced technology and monitoring systems to make it even safer with 24/7 safety measures and regular pipeline safety plans.

To look at it from a different angle there are three components to every pipeline project: industry, labor and government. Industry wants to grow, labor wants to create jobs and the government wants safety and environmental concerns adequately addressed.

But the third leg of this stool is proving to be adversarial. Instead of an advocate for the first two, comments out of the Administration such as eliminating the “dash for gas” are only superseded by the lack of support for gas to back up intermittent renewables and a less than ambitious support system for carbon capture and sequestration at power plants and industrial facilities and a virtual vendetta against hydraulic fracturing and enhanced oil recovery and of course, the denial of Keystone XL. Our country cannot afford an energy policy that is all hat and no paddle.

North America’s Building Trades Unions stand ready to work with this Committee and Congress to find innovative funding mechanisms, sensible regulations and collaborative tripartite relationships between government, labor and industry to bolster America’s leadership in the energy industry and put a floor under the middle class while creating millions of jobs.

Madam Chairwoman, while we talk about the various components of an energy project we cannot neglect to mention the impacts of the local community. Many of our small communities across the country welcome infrastructure investment. In just the pipeline industry alone, we’re talking about 800,000 jobs. The income from these jobs goes directly to our members and local training programs and, in turn, supports the tax base of Main Street and those seeking employment in the construction industry.

This is truly how we can invest in America without spending a single Federal dollar.

The CHAIRMAN. Mr. McGarvey, I am going to ask you to wrap up here.

Mr. McGarvey. I apologize, Madam Secretary.

Thank you for your invitation and opportunity to address the Committee.

[The prepared statement of Mr. McGarvey follows:]
TESTIMONY OF SEAN McGARVEY
PRESIDENT
NORTH AMERICA’S BUILDING TRADES UNIONS
BEFORE THE SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
JUNE 14, 2016

It is an honor to join you today to discuss our nation’s energy infrastructure. As many of you know, North America’s Building Trades Unions is comprised of 14 national and international unions representing 3 million skilled craft professionals in the US and Canada. And on behalf of our members, I welcome the opportunity to explain how our value-based business model and our world class training capacity play an integral role in the construction and maintenance of oil and gas infrastructure. But our expertise and exposure to the energy industry does not end there. Building Trades members can be found working at extraction sites, power plants, carbon capture and sequestration facilities, and export facilities. Currently, we estimate that 50% of our membership is employed by energy-related industries.

I also want to take a moment to thank the members of this committee on both sides of the aisle who have voted to retain prevailing wage protections in the construction industry. By helping to safeguard these community standards, and promoting training, we are protecting and preserving some of the few remaining occupations that cannot be outsourced to foreign countries or decimated by “low-road” business models that are centered upon a low-wage, low-skill, easily exploitable workforce.

In any successful organization, labor or otherwise, being the best means setting high standards and maintaining and exceeding those standards. We harbor no illusions that our success is predicated on anything other than delivering the safest, most highly-trained and productive skilled craft workforce found anywhere in the world.

That is why our rank and file members and our signatory contractors collectively fund, to the tune of roughly one billion dollars a year, a nationwide network of 1,600 local joint labor-management apprenticeship training programs, or JATCs. They are regulated by the Department of Labor or State Apprenticeship councils and they are governed by a Board of Trustees made-up of equal numbers of contractors and labor representatives.

If the Building Trades training system, which includes both apprentice-level and journeyman-level training, was a degree granting college or university, it would be the largest degree granting college or university in the United States — over 5 times larger than Arizona State University. If it was a K-12 school district, it would be the fourth largest school district in the US, only behind New York, Los Angeles, and Chicago.
And there is no taxpayer money involved in this system. Our members contribute a portion of their hourly wage and contractors contribute out of their own pockets.

We are also successfully working with community leaders to leverage both public and private investments in capital construction projects to create structured career-training opportunities for historically underserved communities, such as women, minorities and veterans. Through these efforts, and others, we now boast 100 pre-apprenticeship programs to ready students for the academic and real world challenges of being a union apprentice.

Specific to the topic of today’s hearing, I want to highlight the International Union of Operating Engineers Pipeline Training Fund.

Many of the work opportunities in the natural gas industry require specialization within the pipeline crafts. For example, most Operating Engineers run traditional heavy equipment – such as bulldozers, backhoes, cranes, and excavators. However, the pipeline industry has a unique set of skill requirements; and, the operating engineers maintain a robust training program in partnership with the Pipe Line Contractors Association to meet the industry’s needs. For example, during the natural gas boom, the OE’s developed new curriculum and coursework in directional drilling to add to their existing pipe bending and pipe lifting classes, maintenance and rehabilitation, and rock drilling classes. The IUOE currently offers more than 130 classes in different areas of the pipeline sector.

In real world terms, it means that in Right-to-Work states like South Dakota, specialized operating engineers average $35 an hour. And that means, workers are able to provide for their families while receiving union-provided healthcare and pension benefits.

But it is not as easy as I make it sound. Every single energy project is subjected to years of regulatory and environmental study. And to be sure, pipeline infrastructure has failed to keep pace with increased production, which had caused several regions of the country to experience shortages and severe price spikes.

New England is a perfect example of how the lack of sufficient pipeline infrastructure can have adverse effects on both businesses and consumers. In 2000, only 15% of the New England’s electric generation was from natural gas-fueled power plants. By 2015, that number was nearly 50%. But the pipelines needed to feed these plants with natural gas, presumably from the Marcellus region, had not kept pace.

It isn’t for lack of trying. Less than two months ago, New York State denied the Constitution Pipeline after it had already received FERC approval and the company had been working with the state for three years to mitigate environmental concerns.

The permit denial will delay about 2,400 direct and indirect jobs that would be created during pipeline construction, generating $130 million in labor income for the region. The decision could also cost local governments approximately $13 million in annual property tax revenue.
tax revenue.

Other recent project delays, which have essentially put the pipeline industry into a tailspin, include:

- The Jordan Cove LNG export terminal and associated gas pipeline was rejected by FERC in March and then granted a re-hearing;
- In April, Kinder Morgan’s withdrawal of their Northeast Energy Direct (NED) pipeline application with FERC due to opposition;
- NJ Department of Environmental Protection (NJDEP) review of the final section of the Transco Leidy Line is significantly delayed due to pending litigation;
- The Dakota Pipeline received a revocation of its permit from the US Fish and Wildlife service;
- The Rover Pipeline from the Marcellus region to the mid-west continues its lethargic approval process; and
- Dominion’s Atlantic Coast Pipeline route has been rerouted a number of times to address concerns.

The bottom line is that pipelines are the safest mode of transporting natural gas, and the U.S. Department of Transportation (DOT) statistics show that underground pipelines transport natural gas far more safely than ships, railcars, or trucks. All of the major pipelines I listed above will employ the most advanced technology and monitoring systems to make it even safer with 24/7 safety measures, and regular pipeline maintenance plans.

To look at it from a different angle, there are three components to every pipeline project - Industry, Labor, and Government. Industry wants to grow, labor wants to create jobs, and the government wants safety and environmental concerns adequately addressed. But the third leg of this stool is proving to be an adversary, instead of an advocate of the first two. Comments out of this administration such as “eliminating the dash for gas” are only superseded by the lack of support for gas to back-up intermittent renewables, a less than ambitious support system for carbon capture and sequestration at power plants and industrial facilities, a virtual vendetta against hydraulic fracturing and enhanced oil recovery, and of course, the denial of Keystone XL. Our country cannot afford an energy policy that is all hat, no cattle.

North America’s Building trades unions stand ready to work with this committee and Congress to find innovative funding mechanisms, sensible regulations and a collaborative tripartite relationship between government, labor, and industry to bolster America’s leadership in the energy industry and put a floor under the middle class while creating millions of jobs.

Madame Chairwoman, while we talk about the various components of an energy project, we cannot neglect to mention in the impacts on the local community. Many of our small communities across the country welcome infrastructure investment. In just the
pipeline industry alone, we are talking about 800,000 jobs. The income from these jobs goes directly to our members and local training programs, and in turn this supports the tax base of Main Street and those seeking employment in the construction industry. This is truly how we can invest in America without spending a single federal dollar.

But programs like ours must have market certainty. Without a synergistic relationship between industry, labor and government, we cannot prepare for future demands. Our model is based on seamless cooperation to move projects forward at the federal, state, and local levels.

Workforce development is something we take very seriously. So when redundant regulations and politically-motivated lawsuits funded by billionaire environmental advocates are aimed squarely at killing projects, it hinders our ability to create jobs and prepare the next generation of construction workers for tomorrow.

Thank you for your invitation and the opportunity to express my views here today.
The CHAIRMAN. Thank you. I am sorry to cut you off. Your full statement will be included as part of the record.

Mr. McGarvey. Thank you.

The CHAIRMAN. We are just trying to stick to our five minutes here.

Mr. McGarvey. Gotcha.

The CHAIRMAN. Dr. Parfomak, welcome.

STATEMENT OF DR. PAUL PARFOMAK, SPECIALIST IN ENERGY AND INFRASTRUCTURE POLICY, CONGRESSIONAL RESEARCH SERVICE (CRS)

Dr. Parfomak. Good morning, Chair Murkowski, Ranking Member Cantwell and members of the Committee. My name is Paul Parfomak, Specialist in Energy Policy at the Congressional Research Service. CRS appreciates the opportunity to testify about oil and gas pipeline infrastructure today.

In accordance with our enabling statute CRS takes no position on policy or legislation.

The United States pipeline network is integral to the nation’s energy supply and provides vital links to other critical infrastructure such as power plants, airports and military bases. Recent growth of domestic natural gas and crude oil production has resulted in an unprecedented expansion and reconfiguration of this network.

From an energy market perspective continued expansion of U.S. pipelines has the potential to improve the efficiency of gas, oil and refined products transportation linking new producing regions with traditional consuming markets more directly with greater capacity and reliability. Such linkages may lower average transportation costs and may reduce regional price differences for energy commodities, especially in the case of crude oil that may also reduce the volume shipped by rail, truck and barge.

Pipeline expansion may also support jobs in energy production and pipeline construction and may create economic benefits among industries that rely on oil and gas as key inputs.

However, the future operation and expansion of the pipeline network also face significant challenges related to safety and security, emissions regulation, price volatility and public perception which I will now discuss.

Pipelines are a comparatively safe means of transportation compared to other modes. Nonetheless, a single, uncontrolled pipeline release can be catastrophic in terms of human life, property damage and the environment. Uncontrolled releases in Michigan, Arkansas, California and other states have raised congressional concern about pipeline risks and increased local intervention in pipeline development.

Over the last 15 years Congress has acted repeatedly to strengthen Federal oversight of pipeline safety and security. Additional safety regulations are being finalized and new safety legislation is pending. Congress is likewise examining the Federal oversight of pipeline security addressing both physical threats and the growing threat of cyber-attacks.

New safety regulations and evolving security guidance are intended to reduce overall pipeline network risk but their associated costs and practical impacts have yet to be determined.
In 2015 the Environmental Protection Agency finalized its Clean Power Plan to regulate greenhouse gas emissions from existing power plants. Last month, the EPA also issued new regulations to reduce emissions of methane and volatile organic compounds from the oil and gas industries including pipelines.

The Clean Power Plan is currently under litigation. If implemented, it may encourage natural gas-fired generation to replace coal-fired generation and to firm up renewable power. Such an outcome could increase demand for pipeline capacity and could potentially increase gas and power interdependency. Regulations to reduce pipeline system direct emissions will likely effect how pipelines are operated and maintained with implications both for the environment and public safety.

Energy markets are in a period of significant price volatility. In January, for example, the price of Brent crude fell below $29 per barrel, dropping over 45 percent in about three months. Last week, Brent crude traded back above $50. Likewise, since 2012, Henry Hub natural gas prices have fluctuated from under $2 to over $6 per million BTU.

Such price volatility adds significant risk premiums to capital investment decisions for pipeline developers. One result of these uncertainties may be greater caution among developers before committing additional capital to new pipeline projects or the cancellation of existing projects such as the Northeast Energy Direct Pipeline which failed to attract enough customers.

The oil and gas sectors tend to have a long-term perspective on infrastructure investment, often 20 years or more. So a short-term price volatility may not change their long-term plans, but the timing and location of their pipeline investments may have important implications for regional markets.

Public perception of pipeline infrastructure has long been a consideration in pipeline development, but its importance seems to have intensified over the last several years. Public concern about pipeline safety has prevented new pipeline siting in certain localities and increased development time and cost in others. Controversy surrounding the Keystone XL pipeline and the Constitution pipeline are just two recent examples of projects heavily influenced by public opinion, even where there is Federal siting authority state and community stakeholders retain many statutory and regulatory avenues to affect siting decisions. Consequently, public perception is likely to be an ongoing priority in planning and policy related to pipeline development.

Thank you for the opportunity to appear before the Committee. I will be happy to elaborate on my opening remarks and address any questions you may have.

[The prepared statement of Dr. Parfomak follows:]
Statement of
Paul W. Parfomak
Specialist in Energy and Infrastructure Policy

Before
Committee on Energy and Natural Resources
U.S. Senate

Hearing on

“Oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction, and maintenance considerations associated with that infrastructure”

June 14, 2016
Good morning Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee. My name is Paul Parfomak, Specialist in Energy Policy at the Congressional Research Service (CRS). CRS appreciates the opportunity to testify here today about oil and gas pipeline infrastructure. In accordance with our enabling statutes, CRS takes no position on policy or legislation.

Introduction

The United States’ pipeline network is integral to the nation’s energy supply and provides vital links to other critical infrastructure, such as power plants, airports, and military bases. Recent growth of domestic natural gas and crude oil production—primarily from shale—has resulted in an unprecedented expansion and reconfiguration of this network. From an energy market perspective, continued expansion of U.S. pipelines has the potential to improve the efficiency of gas, oil, and refined products transportation—linking new producing regions with traditional consuming markets more directly, with greater capacity and reliability. Such linkages may lower average transportation costs and may reduce regional price differences for energy commodities. Especially in the case of crude oil, they may also reduce the volumes shipped by rail, truck, and barge. Pipeline expansion may also support jobs in energy production and pipeline construction, and may create economic benefits among industries that rely on oil and gas as key inputs. However, the future operation and expansion of the pipeline network also face significant challenges related to public safety, environmental risk, and energy market economics.

Safety and Security

Pipelines are a comparatively safe means of transportation compared to other modes. Nonetheless a single uncontrolled pipeline release can be catastrophic in terms of human life, property damage, and the environment. Uncontrolled releases in Michigan, Arkansas, California, and other states have raised congressional concern about pipeline risks and increased local intervention in pipeline development. Over the last 15 years, Congress has acted repeatedly to strengthen federal oversight of pipeline safety and security. Additional safety regulations are being finalized and new safety legislation is pending in the Senate. Congress is likewise examining the federal oversight of pipeline security, addressing both physical threats and the growing threat of cyber attacks. New safety regulations and evolving security guidance are intended to reduce overall pipeline network risk, but their associated costs and their practical impacts have yet to be determined.

EPA Emissions Rules

In 2015, the Environmental Protection Agency (EPA) finalized its Clean Power Plan to regulate greenhouse gas emissions from existing power plants. Last month, the EPA also issued new regulations to reduce emissions of methane and volatile organic compounds from the oil and gas industries, including pipelines. The Clean Power Plan may encourage natural gas-fired generation to replace coal-fired generation and to firm up renewable power. Such an outcome could increase demand for pipeline capacity and could potentially increase gas and power interdependency. Regulations to reduce pipeline system direct emissions will likely affect how pipelines are operated and maintained, with implications both for the environment and public safety. Taken together, these new EPA regulations may become a major factor affecting U.S. pipelines—complicating policy debates about energy supply and influencing investment decisions.
Price Volatility/Financial Uncertainty

Energy markets are in a period of significant price volatility. In January, for example, the price of Brent crude fell below $29.00 per barrel, dropping over 45% in about three months. Last week, Brent crude traded back above $50.00. Likewise, since 2012, Henry Hub natural gas prices have fluctuated from under $2.00 to over $6.00 per million Btu. Such price volatility creates financial difficulty for domestic producers. It also adds significant risk premiums to capital investment decisions for pipeline developers. The as-yet undetermined effects of new federal regulations create additional investment risk. One result of these uncertainties may be greater caution among developers before committing additional capital to new pipeline projects, or the cancellation of existing projects, such as the Northeast Energy Direct pipeline, which failed to attract enough customers. The oil and gas sectors tend to have a long-term perspective on infrastructure investment—often 20 years or longer—so short-term price volatility may not change their long-term plans, but the timing and location of their pipeline investments may have important implications for regional markets.

Public Perception

Public perception of pipeline infrastructure has long been a consideration in pipeline development, but its importance seems to have intensified over the last several years. Public concern about pipeline safety has prevented new pipeline siting in certain localities and increased development time and costs in others. Controversy surrounding the Keystone XL Pipeline and the Constitution Pipeline are just two recent examples of projects heavily influenced by public opinion. Even where there is federal siting authority, state and community stakeholders retain many statutory and regulatory avenues to affect siting decisions. Consequently, public perception is likely to be an ongoing priority in planning and policy related to pipeline development.

Thank you for the opportunity to appear before the Committee. I will be happy to elaborate on my opening remarks and address any questions you may have.
The CHAIRMAN. Thank you, Dr. Parfomak.
Mr. Peress, welcome.

STATEMENT OF N. JONATHAN PERESS, DIRECTOR OF AIR POLICY, ENVIRONMENTAL DEFENSE FUND (EDF)

Mr. PERESS. Chairman Murkowski, Ranking Member Cantwell and members of the Committee, thank you for providing this opportunity for the Environmental Defense Fund to discuss challenges and opportunities associated with natural gas pipeline infrastructure.

Pipelines play a critical role in our economy and in the ongoing transformation of the energy system to reduce air pollution and deploy renewable energy resources. In this regard natural gas is particularly well suited to provide flexible reliability services like fast ramping in response to variable wind and solar output.

The challenge we face is that the natural gas market design is no longer in sync with contemporary supply and demand dynamics. Market price signals for the kinds and amounts of new midstream gas infrastructure are not focused and as discussed in my written testimony, are likely to result in more pipeline capacity than we need. And because pipelines are so expensive to build and operate excess capacity will impose billions of dollars in unnecessary costs to energy customers.

At a time when energy customers have new data-driven tools and smarter control over energy consumption decisions, the natural gas market design is comparatively dumb, especially in comparison to the wholesale electricity markets.

Electricity markets balance supply and demand continuously and they financially settle. In other words, they price and set the value of electricity and reliability services every five minutes, every 15 minutes at the most. Natural gas pipelines, on the other hand, are compensated based almost entirely on fixed charges to reserve capacity through long-term contracts, 20 years or more for new pipelines, not fees based on how much gas is delivered and not the value of gas delivery services at times during the day when pipeline customers most need gas.

As a consequence, pipeline operators are somewhat financially indifferent to whether their pipelines are fully utilized. Nationally, 46 percent of available pipeline capacity goes unused according to a recent Department of Energy study. In other words, almost half of the money being paid by the pipeline customers, often retail and energy consumers, is for annual capacity that they are not using. Likewise, pipelines have muted incentives to provide flexible delivery services in response to customer needs.

Gas-fired electric power generators, now the largest pipeline growth customer, simply do not operate in a steady state. What generators and most pipeline customers desire is the flexibility to get gas deliveries when they need gas and this flexibility need is increasing in a more flexible dynamic and controllable system. Flexibility then, in general, is not offered and is not priced by the pipelines.

In some regions it may be that what is needed is more natural gas storage, more LNG storage, electric storage or price responsive demand response or it may be more pipelines. Without the market
creating targeted price signals, gas consumers and regulators can’t
determine the least cost solutions.

We empathize with the challenges being brought to the Committee’s attention by the National Association of Manufacturers. NAM
needs better gas deliverability but because pipelines are paid for
capacity, not services, the price for that deliverability has not been
clarified. And paying for more annual capacity is not necessarily a
cost investment, cost effective investment, for NAM’s members to
make, otherwise they would be making it. Those are the economic
underpinnings to the math problem that Mr. Epstein mentioned
earlier.

FERC understands this problem. They asked the pipeline industry
to voluntarily develop faster, more responsive services, but the
pace of change is too slow.

EDF, at its core, believes that well-structured markets efficiently
allocate capital and resources and will benefit—and will foster ben-
eficial environmental outcomes.

In the context of efficient outcomes, I want to touch on methane
emissions which when leaked into the atmosphere constitute waste.
Waste which not only adversely effects energy customers but also
which goes to the heart of natural gas as an environmental solu-
tion.

Earlier this year we had a glaring example of that waste. The
leak at Aliso Canyon was the largest ever measured in U.S. history
forcing thousands to flee from their homes, releasing enough meth-
ane to supply 60,000 homes for a year. Methane is a potent climate
forcing agent, and this disaster was preventable through basic, well
construction, operation and inspection practices. Aliso Canyon
amounts to a failure of voluntary measures and of regulatory over-
sight. The extent of preventable leaks raises legitimate questions
about the propriety of substantial further gas infrastructure expan-
sion.

Thank you for the opportunity to present our perspectives which
my written testimony discusses in greater detail.

[The prepared statement of Mr. Peress follows:]
TESTIMONY OF N. JONATHAN PERESS
DIRECTOR OF AIR POLICY, ENVIRONMENTAL DEFENSE FUND
BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

“OIL AND GAS PIPELINE INFRASTRUCTURE AND THE ECONOMIC, SAFETY, ENVIRONMENTAL, PERMITTING, CONSTRUCTION AND MAINTENANCE CONSIDERATIONS ASSOCIATED WITH THAT INFRASTRUCTURE.”

TUESDAY, JUNE 14, 2016

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you for this opportunity to discuss some of the challenges and opportunities associated with natural gas pipeline infrastructure.

Environmental Defense Fund (EDF) is a national environmental advocacy organization with more than one million members and supporters nationwide. We are dedicated to finding innovative approaches to solving some of the most difficult national and international environmental challenges. Whenever possible, we collaborate with private-sector partners, state and federal leaders, and other environmental organizations interested in maximizing incentives for market-based solutions to environmental problems.

EDF is devoting considerable attention to our nation’s natural gas pipeline infrastructure. EDF is represented on the Pipeline and Hazardous Material Safety Administration’s (PHMSA) citizen advisory board for gas pipelines. We are active before the Federal Energy Regulatory Commission (FERC) in ongoing efforts by the agency to refine and improve the market rules governing natural gas pipeline operation and capacity expansion. EDF is a member of the North American Energy Standards Board (NAESB), where I have a seat on its Board of Directors.

As part of an ongoing multi-year effort to better understand the magnitude, causes, and solutions to methane emissions across the natural gas supply chain, EDF has participated in numerous peer-reviewed, published, scientific studies characterizing the problem of methane emissions from the nation’s natural gas delivery system. As an outgrowth of this effort, EDF is playing an active role in shaping public policy in response to the catastrophic failure of an injection well at the Aliso Canyon gas storage facility in California this past fall.

In all of our work, EDF prides itself on working constructively with the oil and gas industry, federal and state policymakers and regulators, environmental and consumer advocates, and other stakeholders to achieve a gas delivery system in this country that is safe, reliable, efficient, and configured to support progress toward a low carbon future.

My testimony today will address opportunities to update natural gas wholesale market rules to better align with contemporary supply and demand dynamics, which in turn, will clarify the extent of need and commercial considerations attendant to new interstate natural gas pipeline capacity. I will also discuss the results of our relevant methane emissions studies and the opportunities these studies point to for reducing leaks across our nation’s gas gathering, processing, transportation, distribution and storage system, and enhancing the integrity and reliability of this system. My bottom-line message is that there is much that we can do to improve the safety, reliability, and methane emissions performance of our nation’s natural gas industry,
and to ensure that investment in new pipeline infrastructure is right-sized, as we continue to move towards a cleaner, more efficient, renewable-centric and zero carbon energy future.

**Natural Gas Transportation Wholesale Market Design and Capacity Needs**

Natural gas is playing a role in transitioning our nation to a cleaner, lower carbon future. Increased production and use of natural gas is helping to end our dependence on carbon-intensive, highly polluting coal for power generation. Fast-ramping natural gas fired generation helps integrate increasing amounts of renewable electricity generation into our nation’s electric grid. And in places like New York City, natural gas is helping to displace high sulfur, dirty fuel oil for home heating, leading to dramatic air quality improvements in our largest city.

But these benefits come with significant environmental costs to the communities where the gas is produced. I will not dwell on the many issues associated with unconventional oil and gas development. They are real, but I respect the fact that this is not the topic of this hearing today.

I will, however, discuss the climate implications of natural gas infrastructure as these are germane to the issue of a safe, reliable, efficient gas delivery system. Simply put, the ability of natural gas to deliver on its promise as a cleaner, lower carbon alternative to coal and oil and as a transition to a low carbon future anchored by renewables, depends on whether we’ve designed the wholesale market rules to support the gas transportation infrastructure needed to achieve that future, and whether natural gas infrastructure is free from preventable methane leaks and losses, which unabated, eat away at some, if not all, of the climate benefit from substituting natural gas for coal or oil.

To start with, the energy system in the United States is in the midst of a massive transformation due only in part to prolific new and recoverable natural gas supplies. In parallel to the shale gas revolution has been a dramatic drop in the cost of renewable energy technologies, particularly wind and solar. Energy efficient lighting and appliances are entering the market and fundamentally changing the future trajectory of U.S. energy demand. Information technology applied to energy supply and consumption is enabling greater consumer control in delivery and use, and empowering greater customer choice. Taken together, these developments pose daunting implications for a natural gas market designed and organized at a time when coal was king, gas-fired generation was an afterthought and gas supply for manufacturing and industry was far less a consideration than it is today; and they raise major questions about the magnitude and economics of natural gas supply and consumption in the future.

It is increasingly apparent within the new supply and demand dynamics that there are opportunities to enhance system efficiency by better utilizing existing pipeline capacity. According to the Department of Energy (DOE), average capacity utilization for the interstate pipeline system between 1998 and 2013 was only 54%. (Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector, February 2015).

In fact, during the polar vortex event in January 2014, when it is widely believed that the interstate pipelines serving the northeast were totally full, EDF’s detailed analysis of pipeline flows demonstrate that several large pipeline systems within the zone of perceived constraint had large amounts of unused capacity, even on the coldest days when gas and electricity spot market prices were at their highest. In addition, other pipelines, notably those with around-the-clock scheduling flexibility, often managed to deliver amounts of gas that exceeded their firm contracted
capacity within the zone of perceived constraint. The accuracy of EDF’s analysis has been confirmed with the implicated pipelines and market participants.

FERC is addressing this market inefficiency and in recent orders directed the industry, under the auspices of NAESB, to develop enhanced scheduling standards and services to “promote more efficient use of existing pipeline infrastructure and provide additional operational flexibility to all pipeline shippers [customers].” (FERC Order No. 804, Coordination of the Scheduling Processes of Interstate Natural Gas Pipelines and Public Utilities, April 16, 2015). EDF is deeply engaged in these proceedings and in other ongoing refinements to increase capacity utilization. When pipelines are better utilized, pipeline customers and energy consumers can avoid costs for some new pipeline capacity.

In the recent Quadrennial Energy Review (QER, April 2015), the DOE summarized approaches to and the comparative costs for improving natural gas pipeline capacity and deliverability. In the first instance, the most inexpensive way to transport gas is by using existing infrastructure, noting that many pipelines have excess capacity. In cases where utilization of an existing pipeline network is high, DOE states that the next most cost effective solution is to add capacity to existing lines through increased compression and looping, noting that the more modern pipelines were designed so that compression could be increased in order to add capacity at low cost. Finally, DOE observes that where existing pipeline utilization is high and capacity utilization is maximized, the market-based underpinnings incent new capacity investment (“then the price differential between the two points on the network should increase and create an incentive for shippers to support midstream pipeline development in order to capture the arbitrage opportunity across the network.” QER Appendix B at p. 29). It further observes that “the need for new pipelines is apparent in the Marcellus, where the largest amount of pipeline investment is expected to occur.”

More recently, FERC assessed the extent and sufficiency of the ongoing pipeline buildout. In the State of the Markets 2015 Report (April 2016), FERC staff analysis concluded that in most of the country, “regional price differences across the country were not large, a sign that midstream investment over the past 10 years have largely relieved natural gas transportation constraints.” An exception, according to FERC staff, is the Marcellus production area of the northeast and into New England, but that “new capacity additions should significantly relieve transportation constraints in these regions by 2019 if projects that are planned and under construction are approved and completed by the scheduled in-service dates.”

In fact, there is reason to believe that more year-round capacity than is needed is currently under development to transport Marcellus gas.

Just last week, an experienced and respected gas industry veteran, RBN Energy LLC President Rusty Braziel, shared his analysis suggesting that currently planned takeaway capacity from the Marcellus is on the way to an “overbuild.” According to Mr. Braziel, his firm estimated Northeast production through 2021 by taking a range of price scenarios and determining what producers would be likely to drill and how many drilled but uncompleted wells they would put into service. In RBN’s most aggressive growth scenario, production would increase by 11 billion cubic feet per day (Bcf/d) over the next five years. Adding up all of the major proposed new pipeline projects, RBN calculated 18 Bcf/day of new takeaway capacity under development, resulting in excess capacity (illustrated below).
With the magnitude of new pipeline projects under development in addition to those deployed over the past 10 years, there are signs that a gas pipeline capacity bubble is forming. A capacity bubble could impose unnecessary costs on energy customers for expensive yet unneeded pipeline capacity, and ultimately constrain deployment of lower cost energy sources like wind and solar in the future considering the long financial lives and expense of new capacity. Where new pipeline capacity is financed by market participants who choose to risk their capital to capture benefits, the prospects of an overbuild are not particularly troublesome from the economic standpoint of society as a whole. However, a pipeline capacity build-out induced by policies designed to spread the costs of new infrastructure on captive retail gas or electric ratepayers will almost surely become un-economic, undermine market drivers for more efficient solutions and impose unacceptable long term environmental and economic costs.

Here’s why. Pipelines are capital intensive and expensive. On a per unit (either per dekatherm or per million btu) basis, transportation costs for new greenfield capacity are almost as much as the current commodity price for natural gas.

Before a proposed new pipeline can apply for a FERC Certificate, it must execute contracts providing sufficient revenue from shippers to pay for the full cost of the project. Those costs include: construction, return on and of equity, depreciation, taxes, maintenance and operations. In these contracts (referred to as “precedent agreements”), pipeline customers (“shippers”) agree to cover these costs through take-or-pay obligations whereby daily pipeline delivery capacity is reserved and paid for by shippers for every day over the term of the transportation service agreements — whether or not those services are used. Because the cost of constructing a new pipeline (particularly a greenfield project) are so great, these contracts must be of long duration, typically 20 years. Normally, new pipelines are financed over 35 — 40 years in order to spread the costs so that per unit transportation services can be reasonably affordable.

Pipeline customers voluntarily enter take-or-pay contracts for “firm” transportation capacity over long periods of time when they determine that the cost of the new capacity is less
than the price differential between the supply and their delivery points (referred to as the “basis differential”), thus capturing an arbitrage opportunity across a transportation network, as DOE points out (discussed above). In the natural gas transportation market, that basis differential disappears the day the new pipeline capacity comes into service, as the capacity provides a new delivery pathway between the two pricing points to eliminate the basis differential.

Shippers entering into long term agreements with capacity developers must have a high degree of confidence that the market conditions signaling the need for new pipeline capacity will persist for many years into the future. In the absence of a voluntary transaction between capacity developers and market participants risking their own capital, further capacity expansion would only occur in the event policymakers impose long term financial obligations on captive ratepayers for costly long-lived infrastructure. And should they do so, they are going outside of the price signals sent by a rational market. Any such government-induced incursion into the market is highly risky and if pursued, is likely to impose costs on the obligors in excess of putative benefits, while enriching those who benefit without their bearing risk in proportion to the investment.

As it stands, we are seeing a disturbing trend of utilities pursuing a capacity expansion strategy by imposing transportation contract costs on state-regulated retail utility ratepayers so that affiliates of those same utilities can earn shareholder returns as pipeline developers. In the last three years, a dozen or more utility holding companies have entered into affiliate transactions whereby the retail utility affiliate commits to new long term capacity with its pipeline developer affiliate. The essence of this financing structure is to take a cost pass-through for a retail gas or electric distribution utility—a contract for natural gas transportation services—and pay those transportation fees to an affiliated pipeline developer entitled to accrue return on its investment from that same revenue. Thus ratepayer costs which may not be justified by ratepayer demand are being converted into shareholder return.

In this testimony, EDF is not asking the committee to second guess the determinations of state Public Utility Commissions to approve such affiliate transportation agreements. We suggest, though, that in the aggregate, ratepayer subsidization schemes along these lines are likely to induce new capacity deployment in excess of rational market outcomes, and therefore bear on the extent of need for and prospective benefits of further policy incursion at the federal level.

From EDF’s vantage point, retail energy customers would benefit from policy refinements whereby FERC undertakes a more robust and detailed assessment of the extent and duration of market need for new interstate pipeline capacity by refining its longstanding pipeline permitting policy—which largely relies on the mere existence of transportation service contracts as sufficient evidence of market need. As we and others are pointing out to the Commission, the crux of the Commission’s statutory duty in setting rates is to establish an equitable balance of risks and rewards as between pipeline ratepayers and pipeline shareholders. Any policy or outcome which imposes costs on captive ratepayers in a manner that provides disproportionate benefit to pipeline shareholders (or third party gas consumers) is suspect within the rubric of the Natural Gas Act’s fundamental risk/reward balancing precepts.

Another issue for policy consideration, with major implications to capacity utilization and market price signals for new pipelines results from the current market design: increasingly there is a mismatch between the level and types of transportation services provided (and priced) by the pipelines versus the more flexible needs of their largest growth customer, electric power generation. Because pipeline revenue is heavily weighted towards the sale of capacity, pipelines have diminished commercial incentive to earn revenues by providing flexible delivery services (either by facilitating varying flow quantities or multiple delivery scheduling opportunities over
the course of a day). Flexible delivery services, however, are the primary need of electric power generators, and becoming increasingly so in a more dynamic and renewable electric grid.

Under the standard contract form, virtually all transportation services are provided as “ratable” flows. Ratable flow means that when a shipper schedules deliveries with a pipeline, it must schedule hourly delivery of 1/24th of its contracted daily quantity every hour. In other words, the market design assumes that transportation customers want and will take a fixed level of flow over every hour of the day after making a scheduling request with a pipeline. While some pipelines provide enhanced delivery flexibility (such as “no-notice” scheduling allowing shippers to vary flows), the overwhelming majority (approximately 90%) of contracted transportation services require uniform hourly flow.

Electric power generation has grown from less than 15% of total pipeline flows in 2008 to 34% in 2015, and is forecasted to grow to 40% or more in the next five years. (EIA data, National Association of Manufacturers Nay 2016). But very few electric generators need steady flows of gas because the vast proportion of power plants do not run at the same level of output for every hour of the day. According to EIA data (January through November 2015, compiled by energy consultancy Skipping Stone) only 6% of natural gas-fired power plants operate at above an 80% load factor with the majority of output (68%) being generated by plants operating between a 50% and 80% load factor. Moreover, daily power production fluctuation is increasing as more renewable energy is deployed.

Going forward, we suggest that it is critical to reliable, efficient and cost-effective operation of the grid for pipelines to provide and price short-term (even within day) flexible delivery services, as natural gas-fired power generation continues to increase its market share.

We suggest that market rules should provide pipelines with some form of within-day pricing flexibility for non-ratable short-term services in order to start sending price signals for this type of service. Only through effective price formation for the value of flexible services, will the market see price signals and in turn channel investment to those willing to provide these fast response varying receipt and delivery services, either provided by pipelines or others.

Such price signals, along with those coming from basis differentials, will signal to the market the type of capacity services that are needed and will call forth the right mix. Without such price signals, neither the market nor policymakers will know with any certainty whether what is called for is more short-term flexibility or more costly long term year-round pipeline capacity. It may be that what is needed is better and higher utilization of storage, including gas, and/or electric (batteries), or price responsive demand response; or it may be more pipelines. Without such short-term services and the price signals they generate, market participants and regulators can’t know.

What we do know is that for the first time in almost thirty-five years, there are existing pipelines seeking rate relief from FERC because they are unable to generate sufficient contract revenue to cover operating costs plus entitled rates of return. The FERC filings of two sizeable pipeline networks seeking FERC approval to increase rates assert that production increases from new regions are altering flows away from and on different parts of their systems and these alterations negatively impact revenues to the pipeline systems. Notably, the filings also explicitly recognize that going forward, renewable energy sources like wind and solar are likely to offer a viable competitive alternative to natural gas particularly over the presumptive 35-40 year economic life of new pipeline capacity. (ANR Pipeline and Tallgrass Interstate Transmission System testimony before FERC).
The ANR and Tallgrass filings seek to impose large rate increases on “recourse” customers and provide a glimpse of an overbuilt future. EDF suggests that a rate design weighted to the value of services, more so than the cost of capacity, will provide more focused price signals for where, what amount and what types of new capacity are cost effective (both now and in the future).

**Methane Leaks: An Economic, Safety and Environmental Problem**

An area of particular environmental concern to scientists and environmental groups is the problem of methane emissions from across the natural gas supply chain. Although it burns more cleanly than coal, un-combusted natural gas is mostly methane, a greenhouse gas 84 times more potent than carbon dioxide in the first 20 years after its release. As natural gas production and use continue to expand, methane emissions threaten to cancel out the climate benefits that natural gas proponents often claim, especially with regard to the growing share of electricity generation fueled by gas.

According to EPA’s most recent greenhouse gas emissions inventory (1990 through 2014, released April 15, 2016), the oil and gas sector represents 33% of U.S. methane emissions, the largest of all U.S. sources. My scientist colleagues at EDF are in the midst of completing the most comprehensive assessment of methane emissions from the oil and gas sector today through 16 studies conducted with academic experts and in collaboration with dozens of oil and gas market participants.

One of these studies, conducted by researchers at Colorado State University, conclude that emissions from the gathering system account to 30% of total emissions. (Marchese et al., ES&T 2015). According to this study, facilities that collect and gather natural gas from well sites across the United States emit about one hundred billion cubic feet of natural gas a year, roughly eight times the previous estimates by the EPA for the segment. The wasted gas identified in the study is worth about $10 billion, and packs the same 20-year climate impact as 37 coal-fired power plants. Currently, these gathering facilities are largely unregulated; in the vast majority of the system, leak abatement and safety management are dependent on voluntary measures by individual operators.

In the transmission and storage segment, another study in our series of 16 estimated annual emissions of about 80 billion cubic feet per year escaping from thousands of key nodes along the nation’s natural gas interstate pipeline system. This equals the 20-year climate impact of 33 coal-fired power plants and more than $240 million worth of wasted natural gas per year.

The estimated storage emissions, however, do not include emissions from well failures like the recent Aliso Canyon disaster in California which released nearly 100,000 tons of methane. Operators aren’t required to report the amount leaked to regulators – nor is there currently a method for EPA to consider these emissions in their official estimates. Aliso Canyon is a glaring example of the public health, safety, environmental and economic consequences when oversight of expanding mid-stream infrastructure is left to largely voluntary measures, and research shows similar problems occurring regularly on a smaller scale throughout the supply chain.

In addition to adverse climate and public safety impacts, methane emissions from gathering, processing, transmission and storage infrastructure waste a valuable resource paid for, more often than not, by natural gas consumers rather than infrastructure operators. The cost of lost and unaccounted for gas, which includes both is not analogous to leaked gas, is borne by
shippers (i.e., customers) in the interstate pipeline system, and by retail ratepayers in the natural gas utility distribution network.

While research about methane emissions is ongoing, we already know that there is much that can and should be done. A cost analysis performed by experts at ICF, International – based on data from industry – found a striking opportunity for achieving dramatic reductions in methane emissions from the oil and gas sector, including in the equipment being used by midstream operators. The study revealed that a 40% reduction in methane emissions from the sector could be achieved over the next five years at a cost of less than 1 penny per thousand cubic feet of gas produced. Low-cost reductions of this magnitude would go a long way toward ensuring that the expansion of natural gas infrastructure and supply will not be a net loss for the environment.

Moreover, according to ICF, methane emissions reductions at this scale can be achieved using current technology. That is, most if not all, of the equipment and operational improvements needed to provide meaningful emissions reductions can already be found in the market. Accordingly, in any discussion about the need, means, or opportunities for reducing methane emissions from the supply chain, there need be no debate about whether the equipment exists to get the job done. It does, and it is cost-effective to use.

From EDF's standpoint, it is necessary and appropriate for EPA and the Department of Transportation to advance ongoing regulatory initiatives to prevent future Aliso Canyon type incidents and to require cost-effective reductions in methane emissions from the midstream segment. It is critical to the propriety of natural gas, as an increasingly important fuel in the US energy system, for these efforts to continue to fruition.

Thank you for the opportunity to present our ongoing science and policy advocacy which is designed and intended to ensure that natural gas infrastructure is deployed and used in a manner that broadly advances economic, public safety and environmental interests.
The CHAIRMAN. Thank you, Mr. Peress.
I thank each of you for your testimony here this morning.
Again, I mention that we will likely see a vote around 11 o'clock, so we will be moving in and out here but do not let that reflect a lack of interest. I think the fact that we have seven members from each side of the aisle here today indicates a clear interest in understanding more of our infrastructure issues, the capacity issues and I think really, the math problem that you have mentioned, Mr. Eisenberg.

Mr. Peress, I think you are the only one here on the panel who thinks that we might possibly be suffering from over capacity. More of what I hear is a concern that we lack capacity, not only for the immediate term but moving forward and understanding what those needs will be, recognizing that building a pipeline today is extraordinarily expensive and extraordinarily costly from a time perspective.

I mentioned the fact that the construction of the TransAlaska pipeline was a three-year construction process. But getting us to that point, I think we will recall the history, was much longer than that.

Mr. Black, nobody has really talked about the permitting issues and some of the siting challenges.

Maybe it was you, Dr. Parfomak, that spoke to the disincentive, if you will, for investment in pipeline siting things like the regulatory issues, the siting concerns, the permitting.

Mr. Black, can you give us some discussion here on how long permitting is taking for an oil pipeline in the United States? I know we are talking a lot about natural gas here, but can you please talk to me a little bit about the time involved with permitting a pipeline?

Mr. BLACK. Thank you, Senator.
It's taking longer to site many liquids pipelines.
The CHAIRMAN. Define longer.
Mr. BLACK. I don't have that. By a period of years, sometimes, pipelines are taking longer. Of course, Keystone XL is a great example of a pipeline review process that took longer.

Liquid pipelines are sited under state laws so state processes like in Minnesota for the Sand Piper pipeline have been lengthened years beyond what they should be.

And then for Federal issues we need to go through Federal lands agencies if we pass Federal lands or if we need construction-related environmental permits. And in many cases we're able to get through those processes, and we've built more than 20,000 new miles of pipe in the last ten years but it's taking longer and that process adds to the cost of the projects and those costs can ultimately be passed on to the consuming public.

The CHAIRMAN. I want to switch over to jobs for just a moment.
I will probably have an opportunity for a second round here, but there has been some push back, if you will, when we talk about the jobs numbers. Several of you have laid some significant and some impressive numbers out there that come with the construction of a pipeline. But we hear repeatedly the challenge that you are only creating jobs for that specific period of construction; and therefore,
Mr. McGarvey, can you speak to the jobs issue?

Mr. Eisenberg, you talked about, kind of, the broader impact when you create a pipeline it is not just the pipe that is bisecting an area but the implications for broader job creation.

Mr. McGarvey, if you can start, please.

Mr. McGarvey. Thank you.

You know, that’s the language that’s been used around that has been a little aggravating. I don’t—people don’t really understand the construction industry. The Hoover Dam was a temporary job, the Golden Gate Bridge was a temporary job, and the new Freedom Tower in New York that rose in place of the Twin Towers was a temporary job. That’s the nature of construction. People, through the course of 30 or 40 years, maintain their position in the middle class going from construction project to construction project. I’m not aware of a project where somebody starts on their first day and ends their career 40 years later on a construction project.

So that temporary job thing is a real itch for us. It bothers us greatly. It bothers our members when they talk about these career construction craft professionals just being temporary jobs.

The CHAIRMAN. Because they are professional jobs, most clearly.

Mr. Eisenberg, can you speak very quickly to that in terms of the jobs impact and what it means beyond the actual construction of laying the pipe?

Mr. Eisenberg. Absolutely and thank you for raising this.

Obviously, through the Keystone process, I mean, where there was a lot of inflamed rhetoric from every side, it was frustrating to hear that there just wouldn’t be many, many jobs. I mean, obviously, there’s the jobs for the men and women who are going to be making the pipe and building this facility and operating and maintaining it and then the manufacturing jobs that from rolling the aluminum and the steel and the things like that, that actually go into the inputs here, the compressor stations, things like that.

Our studies actually looked at this and added up both the—and analyzed both the construction and the operations and maintenance. And so, just, I mean, I pulled up the oil study. In 2016 when you add those together oil pipelines, both construction and maintenance, will contribute 243,167 jobs. Twenty-eight thousand of them, 28,438, will be in manufacturing.

So the operations and maintenance piece is obviously smaller than construction. These are gigantic construction infrastructure projects, but they’re there and you have to maintain these things. You have to keep them safe, you have to keep them secure and you have to keep supporting them.

Between 32 and 37 percent of that is going to be from the manufacturing side of it, so these are real jobs. They matter to our members, and obviously, we care about them continuing.

The CHAIRMAN. Thank you.

Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair.

Mr. Black, oil being transmitted by pipeline, typically, is it treated to reduce volatility and vapor pressure?
Mr. BLACK. The pipelines are designed for crude oils of all volatility. Many of the products that we deliver have a higher volatility than even light crudes, so the volatility is not really an issue for pipeline transportation which operates mostly underground and does not have the risk of the product coming to an abrupt stop like it does in another transportation mode.

Senator CANTWELL. So there is no regulation, you are saying?

Mr. BLACK. Well there’s certainly regulation about worker safety.

Senator CANTWELL. What is it?

Mr. BLACK. And about pipeline safety, but there are not additional regulations dealing with product volatility——

Senator CANTWELL. What do you——

Mr. BLACK. Because anything that covers gasoline would certainly cover a light crude from the Bakken.

Senator CANTWELL. What do you think the volatility is for most pipelines shipping oil? Do you know? We will follow up with you on a question for the record.

Mr. BLACK. Sure.

Senator CANTWELL. I don’t want to put you on the spot about vapor pressure and pipeline volatility, but it is certainly a subject I have gotten up to speed on in the last year.

Mr. Peress, I want to go back to your comments about natural gas market changes. I don’t want this Committee to get into a debate that we often have now about nuclear power, which is about we have got to change the way it is regulated because nothing can get built. I don’t want to have the same discussion about natural gas, because I would actually like to see natural gas.

But you are basically saying that the market has changed and that we need to have different signals if we want to improve the utilization of the pipelines that we have today. So what do you think those signals are? Shorter contracts? What it is that will allow gas to continue and flourish as a bridge fuel source?

Mr. Peress. Right now the market is completely based on bilateral contracts between pipelines and their customers for capacity. Capacity does not necessarily equal deliverability.

What customers need is they need to get fuel delivered to them. And because that deliverability is not priced because what—pipelines are totally compensated based on capacity. We see inefficiencies within the way that the pipelines are operated.

We are suggesting that pipelines should be able to earn premium revenues for providing enhanced deliverability and flexibility services so that they’re not just getting paid for capacity so that the market calls forth the right types and amounts of resources for customers to get gas when they need it.

Customers don’t need capacity. Customers need gas. There’s a difference.

Senator CANTWELL. How do you think we make this transition, because I am assuming the companies that invested in these pipelines need to recoup their investments. Obviously, there has been a structural change in gas pipeline contracts. I do not know if this came about because we used to use natural gas primarily for heating and now it is for electricity? And the electricity markets are what they are today. I mean, there has been a big change in the market. Is that what we are dealing with here?
Mr. PERESS. Yes, Senator.

It came about in the early to mid–90’s when FERC, I think, prudently decided that they were going to turn both the interstate transmission companies on the electric side and the interstate pipelines into common carriers and take them out of the supply business.

And part of the deal that they struck in order to take the pipelines out of the supply business, in other words, pipelines are not selling gas molecules, they’re selling transportation services, was to come up with a compensation scheme that would keep them interested, engaged and investing capital. And that compensation scheme was based on the value of capacity. And by and large, that compensation scheme and that market design has been highly successful.

Fast forward 20 years. At this point in time it’s—there’s a need for that compensation scheme to evolve. Virtually every customer or company that Mr. Epstein mentioned currently has arrangements to buy firm capacity off of a pipeline. If they wanted to buy more firm capacity, they can invest their money and get more firm capacity. But they don’t want to do that. What they want to do is enhance deliverability. Paying for capacity is not a cost effective investment.

Why? Because you’re paying for that capacity every day of the year, 24/7 over the term of that contract whether or not you use it.

What we think needs to happen is there needs to be a shift in the rate design so that as pipelines are incented to provide more flexible delivery services they can earn and garner revenues from those services which are actually the services that customers need. Capacity does not equal deliverability and FERC understands this.

Senator CANTWELL. Well, I know my time is about expired, but I will say I definitely support the Senate version that we worked out on siting. I am not against siting of new pipelines, but we have to meet safety standards in the law.

But I think this issue that you touched on today is a really big issue. I want safety. I also do not want to get caught short in the long-term because the market has changed and we are not building capacity.

I think it is a very interesting conversation here about how we move forward, so I hope we will continue this conversation.

The CHAIRMAN. Thank you, Senator Cantwell.

Senator Daines.

Senator DAINES. Thank you, Chair Murkowski and Ranking Member Cantwell for holding this important hearing.

I come from the State of Montana. It is a place where we have some of the country’s most pristine wild spaces along with an abundance of natural resources, including robust oil and natural gas industries which support the employment of 43,000 people.

At the same time our scenic mountains, our rivers, our elk, our trout and so forth are the main motivator one might want to stay in our state. In fact, tourism is an industry that is nearly $6 billion and employs over 53,000 Montanans.

That is why, I think, we strike the right balance with the Safe Pipes Act. I was pleased to help author it, and it passed the Senate
unanimously last night. Among other provisions this bill reauthorizes PHMSA through 2019. That takes some of the uncertainty out of the equation. It also helps safeguard the environment by improving inspection report turnaround times. I look forward to seeing the President sign this into law soon.

Mr. Black, I would like to start with the Safe Pipes Act which passed unanimously last night. In your experience in the industry how do you see the Safe Pipes Act making our pipelines even safer?

Mr. Black. Well thank you, Senator, for your role in that bill and in pipeline safety. I remember the field hearing you convened in Montana through your role on the Senate Commerce Committee.

I’d like to single out the provision that you helped author on quicker inspection results. Pipeline operators want to hear for the purpose of improving safety if a PHMSA inspector finds something on his or her visit. Sometimes, unfortunately, we were having a period of even more than a year or two years for that safety inspector to tell the pipeline operator about those concerns.

We’re in the business of learning from each other and continually improving our pipeline safety programs, and we want that input quickly. I want to thank you for that provision that encourages/directs PHMSA to give a post inspection briefing to a pipeline operator much more quickly so that we can get about the business of addressing whatever that PHMSA inspector finds. That’s one way it’s going to improve pipeline safety, and it was a great bill that we were happy to support.

Senator Daines. Thanks, Mr. Black.

I want to shift over to Mr. McGarvey. I was struck by your comments about temporary jobs. I grew up in the construction industry. My dad is still building houses. If you keep food on the table in construction, it is by stringing together a series of temporary jobs to stay employed.

I was struck by the inconsistency on the battle on the Keystone pipeline. Why is it those were temporary jobs but when we are building bridges and highways and infrastructure, those are jobs? I think it is hypocrisy, frankly. That is how you stay employed through a lot of temporary jobs in construction. Thank you, Mr. McGarvey, for that point.

It is clear we need to invest in our energy future and expand our energy infrastructure in order to keep up with demand. Projections in the next 25 years, we are going to add two billion people to the planet. Energy demand is going to increase 85 percent from where we stand today, almost doubling in the next 25 years. The question is how are we going to meet that demand and what role will America play in that?

However, it appears that the Obama Administration is not listening to the unions. I am glad to have a union leader here today, Mr. McGarvey. They are not listening to associations and the families that are most affected by these anti-energy policies.

The denial of the Keystone pipeline was a big loss for Montana workers and families and teachers and unions. Seventy million dollars of tax revenues every year in the State of Montana because that pipeline comes into Montana first.

By the way, it is not just about Canadian oil. One hundred thousand barrels a day of Montana/North Dakota oil was part of the
Keystone pipeline. It was just one of many denials and delays by this Administration.

I appreciate your comment too. You are speaking my language when you said, all hat, no cattle. As a Montanan, I know exactly what you meant by that.

Mr. McGarvey, in your testimony you state that the denial of the Constitution pipeline in New York will delay thousands of jobs that would generate millions in income for families in the region. Can you elaborate on how this denial, like the Keystone XL pipeline and others around the country, is hurting our economy, our unions, our energy security and the families that most need it in this very lethargic economy that we have today?

Mr. McGarvey. Yes, Senator, I’ll do my best. These denials of these pipelines which are the most advanced, technologically advanced, safest pipelines, you know, in the history of the world.

In the case of the New York pipeline, which was already approved by FERC, it really got bogged down which, I believe, was in local politics. There were very strong, anti-pipeline, activist groups in the State of New York. There’s a—just last week, I think it was the State of New York just passed a pretty big bill on green energy which proving that pipeline would have been moved in the opposite direction in the view of some of those folks.

But the bottom line is when it comes to our natural resources, oil and gas, the manufacturing that comes about once we get the pipeline system in place, speaking of the Shell cracker, you know, $6 billion project in Southwest Pennsylvania and New York State hasn’t been able to take advantage of any of that. It doesn’t have the infrastructure in place when it comes to transporting gas and oil through the state.

On top of that, my skilled professionals that I represent, men and women who’ve gone through, you know, three to five years worth of training, 6,000 to 10,000 hours, to be that safest, most productive craft work force in the world, aren’t getting the opportunity to apply their skills. And they’re being told that the green energy future is where we’re going to need your skills. And I would note that the DOE’s Quadrennial Report pointed out that the average medium wage for a solar installer in the United States is $16.01 an hour.

And my membership that I represent currently is making substantially more than that and their families are depending on those higher income levels that are paid, particularly in the oil and natural gas and petrochem industries, to maintain their place in the middle class. So it has a devastating impact when they don’t have the opportunity to go to work and apply their skills. In some cases, they have to travel from their homes to places where work is available, be away from their families, their children. And that puts a separate hardship on a family.

But you do what you have to do in the construction industry, and that’s why it’s called journeyman’s card because you go where the work is. But a reasonable, rational policy in New York State and through the United States on energy, settling most of these differences and continuing the arguments where we need to have them.
Listen, I’m insulted sometimes when people talk about the safety issue because I represent men and women, three million of them, and their families. And if you’ve ever had a member get killed in a construction accident and you’re responsible to go and meet with that family and explain what happened and explain what their future looks like and how you’re going to be able to help take care of them. We put a preeminent focus on safety. That’s why we’re so safe.

And that’s why the industry, also, mostly publicly traded companies, put that emphasis, you know, on making sure that they’re building those safe pipelines, that they’re maintained safely and that they continuously get good ratings and good returns for their investors and the people that live in the communities in which those infrastructure projects go through.

So—

Senator Daines. Yes, and to that point we are out of time, but I know the energy jobs in Montana pay twice, twice, what our state averages are.

Thank you.

Senator Barraso. [presiding]: Thank you, Senator Daines.

We will start with Senator Manchin and the roll call vote has begun.

Senator Manchin. Thank you very much. Thank all of you for your testimony today.

I wanted to say, Mr. McGarvey, basically, I think you know the State of West Virginia pretty well. We have been a heavy, heavy lifter for many years and produced an awful lot of energy for this country. We are an exporter of energy, and we have been heavy in fossil with coal and now we have a natural gas with Marcellus shale coming on and the wet gas with ethane which has been very instrumental in our state.

We have very high unemployment right now because of the demise of the coal industry, if you will. With that being said, we are looking for more opportunities in jobs. I know through your apprentice programs you have been trying to get more of our labor force in there. Can you give me a little update quickly on what you have done so far for some of our laid off miners and some of these people with the skill sets because of the shift in our energy in West Virginia or have you been able to identify that?

Mr. McGarvey. Yes, Senator, we are in one instance across the United States in my testimony talked about apprenticeship readiness programs.

They’re usually a 6- to 12-week program that’s an introduction to the construction industry. So you would take women, communities of color, veterans and bring them into apprenticeship readiness programs, also displaced workers, for instance coal miners in West Virginia. We have a program just starting in——

Senator Manchin. They have a high priority, I am saying.

Mr. McGarvey. Right in Southwest Pennsylvania on the border with West Virginia.

Senator Manchin. Right.

Mr. McGarvey. Which will give opportunities for lots of West Virginia.
Senator MANCHIN. Well, the cracker plant is going to be tremendous for all of us.

Mr. McGARVEY. That’s right.

Working in conjunction with Shell we put that program together. Just kicking it off.

So they move from apprenticeship readiness into apprenticeship. They’ll get credit for skill sets from other occupations they already had, move them further up the economic ladder in the apprenticeship and quickly into journeyman status in a new career that’s self-sustaining in the middle class.

Senator MANCHIN. I have been advocating for a three state solution which would basically be the Mid Atlantic energy hub, the same as the Southwest hub. The three states of West Virginia, Ohio and Pennsylvania should be building the loop to keep the ethane, to keep basically the gas, natural gas, supply to attract more businesses to that area. I think this would be a tremendous opportunity for all of us, and hopefully you all can support that.

Mr. Peress, I think that your group is basically opposed to the XL pipeline. I would just like to hear your explanation.

We have had a train blow up in West Virginia. We had trains blow up everywhere. Why are you all opposed to the line?

Mr. PERESS. Senator Manchin, I’m not aware that——

Senator MANCHIN. EDF?

Mr. PERESS. EDF opposed the XL.

Senator MANCHIN. Let me read it to you. Do you want me to read it to you? You’re—you didn’t know that your president?

Mr. PERESS. Well, I work on natural gas issues, Senator Manchin. If you——

Senator MANCHIN. And that was by Mr. Fred Krupp.

Mr. PERESS. Would that be okay if I——

Senator MANCHIN. Sure, anyway you want to do it.

Mr. PERESS. So anytime there is a large investment in infrastructure that’s a bet. That’s a bet because infrastructure is so costly and so expensive, in the billions of dollars.

Senator MANCHIN. Can I interrupt?

I am going to have to move on because we are running out of time. I want to hear this, but I have never known of a company that would make this type of investment unless they had a market. You are saying they are building these projects on spec whether it be a pipeline or a transmission line, they are building on spec, hoping it will come. Build it and they will use it?

Mr. PERESS. No, I’m saying that companies that invest in infrastructure are making a bet that there’s a market for that infrastructure over the long period of time it takes to pay down that infrastructure.

And from our perspective and what we know, and I can only speak to this on the gas side, not the oil side because my area of
expertise is on gas. The gas industry itself, in recent filings, is suggesting that renewable energy, like wind and solar, will be taking market share away from them, that those will be an increasingly lower cost energy sources.

Senator MANCHIN. But the EIA basically predicts that fossil, as far as gas and coal, is going to be a major player with almost 70 percent of the play, up until 2040. Seventy percent of the energy produced for this nation is going to come from, those resources.

Mr. PERESS. The EIA also predicts increasing amounts of wind and solar——

Senator MANCHIN. That is great, I am saying but it is not going to be baseload. You agree to that, right? It will not be baseload.

Mr. PERESS. I do agree with that.

Senator MANCHIN. So you are going to have to have baseload.

Mr. PERESS. I don't agree with that.

Senator MANCHIN. You do not agree about the need for baseload generation?

Mr. PERESS. No.

Senator MANCHIN. So you like intermittent power? You are okay with——

Mr. PERESS. I think an optimized system uses the lowest cost resources in consideration of public policy elements.

Senator MANCHIN. And you think those could make it without the subsidies that we have given?

Mr. PERESS. Are you referring to pipelines or?

Senator MANCHIN. I am referring basically to renewables and everything else that we have done.

Mr. PERESS. I think once we start opening the door on who is subsidized, how much that becomes a much more assurance.

Senator MANCHIN. I think, Mr. Black, I have one question for you here, real quickly. Do you agree that the type of hub, shale basically, with what Shell is doing up there in the play? Do you believe that type of a hub would attract greater manufacturing infrastructure investment to our region? How do you see something like that developing? It took quite a while for Shell to make a decision on that hub up there, the cracker hub. Do they have the supply in place to do that?

Mr. BLACK. Well, we're going to need enough pipelines to move ethane to those plants. That's a tremendous decision that Shell made that's going to help the region, as you said.

That's a lot of ethane coming out of the Marcellus, very rich, wet gas. We need enough pipelines. If the hub is the way to do it, that's great, because without it there are workers and consumers that are just not getting those benefits.

Senator MANCHIN. Okay. I am sorry, we are off to go vote. Everyone has left. I think it is time to vote.

Thank you all.

Senator BARRASSO. Thank you, Senator Manchin.

Senator Cassidy.

Senator CASSIDY. Well, thank you all. I am really enjoying the testimony.

I love the all hat, no cattle. People say that for jobs but they do not support something which clearly will create jobs.
Mr. Eisenberg, I think it was you. You pointed out that not only, I think Mr. Black and Mr. Eisenberg, that part of the power of this is that it leverages the creation or the preservation of other jobs.

Senator Franken, who is not here, has once asked what has the shale revolution done for Minnesota? I was able to quickly find something that it had done but I think you, Mr. Eisenberg, pointed out that ACME Brick still produces because they can get gas shipped there and that energy intensive, low cost input allows them to preserve those jobs.

Mr. Eisenberg. That’s correct.

Senator Cassidy. Now I am sure that is one example, but there will be many more too, I am sure.

Mr. Eisenberg. There are many, many more in the State of Minnesota and everywhere else that when you invest in manufacturing, a dollar invested in manufacturing, creates $1.40 in economic benefits across the economy.

Senator Cassidy. Then you pointed out, going back to Mr. McGarvey, that the nature of these jobs are not low paid, service jobs. Rather, they are well paid jobs and although they may be temporary, that is the kind of temporary jobs that preserve somebody’s position in the middle class with good benefits.

Mr. Eisenberg. That is absolutely correct.

Senator Cassidy. Yes, I thought that was all very well done.

By the way, for the record we should point out that the State Department said that if the Keystone XL pipeline were built, it would result in greater safety to current modes of transportation, a lower carbon footprint and more lives saved. So just for the record, that is the State Department that has pointed that out.

Now, I really enjoyed your testimony. It was very technical in economics, and it is something that although I suspect one to pass on in disagreement, I thank you for that analysis.

But I could not help but thinking as you mentioned that we have an increased capacity, and we are specifically speaking of the Northeast that I gather during the cold, the polar vortex, they are actually shipping in LNG from the Caribbean and burning heating oil—very carbon intensive and a lot of emissions.

So isn’t part of our capacity, kind of, like an interstate highway system which usually it is easy to travel at three in the morning, but it is rush hour that we need the capacity? It seems as if that capacity is not just for the incremental or the base load, it is also for that spike when you have a polar vortex or when you do an economic development and you need to have another energy intensive enterprise move and create jobs to a region therefore you could say oh, yes, we have the capacity to provide your energy needs. How would you respond to that?

Mr. Peress. Thank you very much for that question. And incidentally, I spent seven of the last ten years on the Participant’s Committee of the New England Power Pool and have been deeply engaged in discussions around gas capacity into New England.

The issue that they’ve—that’s been addressed in New England is focused on getting gas during those peak days, as you put it. And—

Senator Cassidy. May I also interrupt?
We have also looked at that. It also seems that there has been a tremendous substitution with both petroleum oil as well as coal with natural gas. The amount of natural gas growth in the Northeast has been remarkable. I am sure that was allowed because there was already existing capacity.

Mr. PLESS. And indeed I think it's pretty clear that that shift in natural gas has provided benefits.

But the real question and the issue that I raised in my testimony is when you're in a region like New England where you're facing a peak challenge. That is there are 15, 30, 40 days a year when you need to get gas deliverability that arguably, and there's some data that suggests that the pipelines are being used to capacity during those days, is building new capacity and paying for that capacity every day of the year for the other 340 days, the most cost effective way to overcome that problem.

Rational, commercial actors, power plants, industry have decided that pipeline capacity is not the most effective way to address that problem. And indeed, it has been relieved over the past several years. And it's been relieved by those actors making a decision that there are, just in time fuel availability to lower customers——

Senator CASSIDY. But that may be a more carbon intensive method of production, right? It would be cheaper to use petroleum oil to heat, but frankly if we are concerned about greenhouse gases that would be a worse way to do it.

Mr. PLESS. There's no doubt that natural gas, at least at the burner tip, emits less greenhouse gases than oil does. The question is when you considered the limited amount of time where they face these peak issues is that a material difference?

And thus far, the numbers suggest that it is not a material difference. And in fact, LNG which is, which provides for just in time delivery, people are not paying for capacity. They're paying for the fuel that they use because the ability to get LNG to these power plants is not costly, unlike new power plants, has also been a large part of the solution.

And what my testimony suggests is that when we call forth the competition for solutions to address those deliverability challenges, markets will provide the most cost effective outcomes.

Senator CASSIDY. I am over time. I yield back, and I thank you all for really intriguing testimony.

The CHAIRMAN. [presiding]: Thank you, Senator Cassidy.

Senator BARRASSO. Thank you very much, Madam Chairman.

Mr. Peress, you are the Air Policy Director for Natural Gas at the Environmental Defense Fund. In that role you focus on midstream, downstream areas of the natural gas supply chain such as the interstate pipeline system.

I understand you also represent the Environmental Defense Fund in proceedings before the FERC, the Federal Energy Regulatory Commission.

Recently a different environmental group which calls itself Beyond Extreme Energy has engaged FERC albeit using, I believe, highly questionable tactics.

For example, in February of this year this group sent mail protesting FERC's decisions to the homes of the FERC's commis-
sioners, not to their office, but to their homes. The group even went so far as to hand deliver its protest mail to the homes of FERC's commissioners and then post the commissioner's home addresses online. Last month this group announced that it would again target FERC's four commissioners at their homes, directly at their homes. The group issued a press release saying it would, “visit the four FERC commissioners at their homes to hold them accountable for their decisions.”

Now, I find these tactics in today's world to be extremely troubling, very dangerous. Other environmental activists recently drove the Chairman of FERC, Norman Bay, from the stage at an event in Albany, New York. They reportedly stormed the stage and accused FERC of genocide.

Do you believe that physically intimidating public officials at a time like this or any time and their families is an appropriate protest tactic?

Mr. PERESS. Senator Barrasso, the way that we, as a society——

Senator BARRASSO. Yes or no?

Mr. PERESS. Well, I'm not going to speak for the Environmental Defense Fund. I will speak for myself. I think it's highly unfortunate.

Senator BARRASSO. Then why hasn't the environmental community stood up to denounce these tactics? Is it waiting until a public official of FERC confirmed individual or his family or her family, if they get hurt? Is that the plan?

Mr. PERESS. What I can tell you, Senator Barrasso, is that any tactics that constrain civil discourse to come up with solutions to complex problems are not valid tactics in my personal opinion.

Senator BARRASSO. Because your organization, the Environmental Defense Fund, has worked with the group Beyond Extreme Energy on legal initiatives.

Last fall, your group and Beyond Extreme Energy and other organizations co-signed a letter to Attorney General Loretta Lynch. I imagine you did not deliver that to her house. Did you?

Mr. PERESS. I would hope not.

Senator BARRASSO. So tell me, why is your organization now linking arms with a group who believes that physically intimidating public officials and their families is acceptable behavior?

Mr. PERESS. I'm not really sure what precipitated that sign on letter. Sign on letters go around our community all the time.

Senator BARRASSO. Mr. McGarvey, do you believe that blocking the construction of an oil and gas, natural gas, pipeline is a smart and effective way to regulate hydraulic fracturing?

Mr. McGarvey. No.

Senator BARRASSO. Do you believe that blocking the construction of oil and gas pipelines is a smart and effective way to reduce greenhouse gas emissions?

Mr. McGarvey. No.

Senator BARRASSO. So what happens to American workers and their families when environmental activists succeed in blocking the construction of oil and gas pipelines?

Mr. McGarvey. Well I think our greatest example was when the rest of the country and most of the world was going through the great recession in the construction industry, we were going through
a great depression where in many states we were north to 25 percent unemployment. Our unemployment is still double the national average, and where there was an opportunity to put thousands upon thousands of people to work on one pipeline, it was blocked. And unfortunately, many people lost their homes, health care, unemployment insurance ran out. In some cases, suicides amongst our membership spiked because of people's inability to take care of their most important asset, their family, to financially provide for them. So the effects of those kinds of actions in energy infrastructure have a serious, serious economic impact on the members that I represent.

Senator Barrasso. Thank you.

Thank you, Madam Chairman.

The Chairman. Thank you, Senator Barrasso.

Several of you made a reference to energy renaissance, natural gas renaissance, shale renaissance. Would we have had a renaissance, would we have had this uptake in the economy, to use your terms, Mr. McGarvey, and we were in a depression effectively? Would we have had that if we had not had infrastructure in place to avail ourselves of the technology that allows us to go after this resource?

This resource just did not appear there overnight. It has been sitting there. It has been our ability to access it through the technologies that have come about. It is a pretty generic question to you all, but it again speaks to the critical issue that we are talking about here which is making sure that we have adequate capacity within our infrastructure.

Mr. Black, can you speak to that? And Dr. Parfomak, given the research that you have done at CRS, can you also speak to that? So, Mr. Black first.

Mr. Black. Thank you, Senator, for hitting the key point that you need pipeline infrastructure to make this happen.

You discussed the importance of getting product from point A to point B, whether it's crude oil to refineries where it's lower costing or natural gas liquids that get to a petrochemical plant. It wouldn't be possible without the pipeline infrastructure. It's absolutely necessary and it wouldn't happen without it.

The Chairman. Dr. Parfomak.

Dr. Parfomak. There's no question that the unprecedented developments in shale gas were reducing the price of natural gas, you know, from $15, if you remember just a few years earlier, to $2 to $3 to $4 range created a host of economic benefits.

It lowered home heating costs so folks had more money to spend on discretionary expenditures. It lowered manufacturing costs, as others have stated in the past. It made electricity cheaper. And so there are a host of benefits now.

You know, economics tells you supply and demand. Cheap commodity, you're going to increase demand for it and we have this, sort of, you know, cyclical nature in the energy industry as we always have had.

What is interesting to me as an analyst is that we are just, in my view, in the beginning of a huge transition infrastructure wise from an economy where natural gas is produced in certain regions, consumed in certain regions to a physical reshuffling of that, as I
stated in my testimony, and continued transition in the way that natural gas is being utilized.

From my point of view, it sort of requires constant vigilance as to how are things going regulatorily, construction wise, the price of fuels which are influenced not only by developments here but internationally. So it requires a lot of attention to all of these factors, and unfortunately, it's a lot more complicated that it used to be.

The CHAIRMAN. Let me ask about that, the fact that it is more complicated because we speak about the benefits to consumers whether it be lower energy cost. We certainly recognize that the jobs benefit, just the overall benefit, that comes to the broader economy as a whole.

Yet we have this nimby attitude where okay, I want to make sure that I have access to that natural gas. I want to make sure that I have access to this resource, but just don't put it within my eyesight, don't put it in my state, put it in somebody else's backyard.

If the benefits are so apparent and again, I look at you, Mr. McGarvey, because I think from a jobs perspective it is just bold and in your face, why is there this disconnect? I think I called it a cognitive dissonance here. What are we not doing right in conveying to the American public, the consumer, that there is clear benefit here? By the way, if you want to have more affordable, accessible, clean, diverse, secure supplies, you are going to need the infrastructure. What are we doing wrong? Are we not conveying to the work force the importance of this?

Mr. McGarvey. My work force understands the importance of it for sure. It's just ironic that, again, it goes back to our discourse. We can't have an honest conversation where, in a region or in a local area, we have to have outside groups come in and gin up the scare tactics and other things why people should be frightened and opposed.

I mean, it's gotten so bad that ironically even in the State of Vermont, I think, in its last legislative session, I think the Vermont Senate passed a bill out. I don't know that it's made it all the way through to ban but put a moratorium on more windmills in the State of Vermont. We've already closed our nuclear plant up there. I don't know how they're going to do the power generation.

But again, if we could have a rational conversation about the benefits, about not ceding our position as the economic super power to China, about real middle class jobs, families sustaining middle class jobs and what they mean. And for the most part, there's always exceptions to the rule, but for the most part, you know, private investment wants to work with local communities to make it work for them so that it works for all the parties that are involved with it.

And then in my testimony I talked about the three-legged stool government, labor and industry all working together to make sure that we're building safe infrastructure. It's aesthetically pleasing as it can be, as far away from inhabited home sites as it can be and keeps the country moving forward. It goes back to everything else that's going on in our country right now. There's just not, we can't have an honest conversation about what's important.
The CHAIRMAN. I would like to think that here at the Committee we can help move forward on honest conversations. So thank you for bringing that up.

Senator King.

Senator KING. Thank you, Madam Chair.

Sorry about the herkey jerky nature of this. When they call a vote we have to go.

I have a long-term question and a short-term question and perhaps some of this might be for the record.

The short-term question touches on the question that Mr. Peress talked about which is the capacity versus deliverability issue and peaking needs. It has often occurred to me that we build energy infrastructure, and this goes for the electric distribution lines as well, for the hottest day of the year or in the case of natural gas, the coldest day of the year. It is like building a church only for Christmas and Easter and on an off day in April there are not many people there.

Right now in New England, 57 percent of our electricity is being generated by natural gas. My question is where is that going in New England? I know we are going to lose at least one nuclear power plant and probably one or two coal plants.

Mr. Peress, you have talked about this. Isn't there going to be a need over the next 10 to 20 years for additional base load capacity? We will talk about peaking after this.

Mr. Peress. First of all let me say that what we have seen in the markets is that the markets, in particular, New England, but throughout the country, they're getting peakier. That means the average load to peak load, that ratio, is growing which suggests that base load resources are not what is going to be needed in the future. And in fact, there are many trends that suggest that base load resources are not what's needed in the future.

If you look at my testimony I speak in depth about the fact that few, if any, natural gas-fired power plants run as base load resources, less than six percent nationwide. And that's based on recent EIA data.

So the question is less about whether we need to install capacity to meet base load needs and what are the most cost effective means to provide for that flexibility and that deliverability in a more peakier dynamic.

Senator King. Well let's transition then into my second question which is about peaks.

Mr. Parfomak, I would like you to comment. What are the practical alternatives to building excess capacity to deal with peaks? Are we talking LNG storage tanks? How can we deal with this issue of a peak demand in two or three weeks in the year and pretty adequate capacity the rest of the year? Dr. Parfomak, what are your comments?

Dr. Parfomak. There are alternatives on the supply side and the demand side. And so, as examples in the electric utility world, there are programs that have been around for a long time to try to reduce peak——

Senator King. Demand response.

Dr. Parfomak. Interruptible power supplies, now the smart grid is putting meters on people's dishwashers and clothes washers to
turn them off on August afternoons automatically without the consumer having to make a decision and compensate them for that.

So there are probably a number of ways and maybe more ways to be thought of to try to moderate certain types of demand, interruptible rates for natural gas users. But some of them can’t do that, so there’s a limit to the flexibility in demand.

On the supply side, there is that——

Senator King. Well the demand response works for the electric side, but it does not necessarily work for a factory that needs the gas——

Dr. Parfomak. Right, some of them can’t do that, right. Some of them can stop a shift without penalty and make it up, you know, the following week. Some of them can’t. They can’t power down that way.

But in terms of supply there are, of course, use something other than natural gas. We talk about it in the vehicle world using electricity to run cars instead of gasoline. We can use other fuels rather than natural gas and we can use electricity for a process, that sort of thing.

Of course, it’s hard to build transmission lines to get electricity into some of these regions too.

Senator King. But if you charge your car at night there is a lot of excess capacity on the electrical transmission and distribution at night.

Dr. Parfomak. That’s right.

Senator King. A huge amount of excess capacity.

Dr. Parfomak. And that’s again, that’s a practice of capacity utilization and trying to reduce peak loads.

LNG, as you mentioned is another option, but that presents its own challenges.

Senator King. Mr. Eisenberg, your clients, your members, will pay for this new capacity. Are you concerned about paying for excess capacity?

Mr. Eisenberg. So I’m not hearing that from my members at all. There’s a chart on page two of my testimony that shows our natural gas usage. It’s trending up. It’s about three times higher than about any other fuel we’ve got. Manufacturers need always on energy and natural gas can give us that, always has given us that.

So when our members are looking to invest in these contracts, my sense is they’re looking long-term and they’re looking for a secure fuel for a very, very long-term.

Again, we don’t really hear a lot about rates from them. It’s not something that is a top tier issue for our organization because they’re handling it at the state level. But what we do hear is that they need the pipelines to fix some of the geographic issues, the distribution that’s going on there.

Senator King. Thank you, Madam Chair.

I will mention I have a friend in the construction business whose family-owned company has been providing temporary permanent jobs since 1928, so I understand that discussion.

Thank you.

The Chairman. Thank you, Senator King.

Senator Hirono.

Senator Hirono. Thank you, Madam Chair.
I thank all of the witnesses.

Mr. Peress, I found your testimony very interesting and talking about excess capacity and the fact that pipeline owners, I suppose, operators are paid for capacity rather than distribution or deliverability.

You noted that there is a potential for gas and electric rate payers to be stuck paying the bill for pipeline infrastructure that may not be needed. What is the typical time for payback for pipeline, new pipeline, infrastructure to justify the cost of building the pipelines? What is the length of time that they generally look to?

Mr. Peress. I don’t know the answer to that question off hand because it all depends on what the application and use of that natural gas is and the circumstances in the individual market. But what I can say is that customers that make a rational decision to sign up to buy capacity for and long-term contracts, make that calculation and that’s what drives their decisions.

Senator Hirono. It could be 20, 30, 40 years and so that commitment will also commit the rate payers to paying for basically the cost of building the pipeline would go to the rate payers.

Can you expand on your suggestions for what Federal and state agencies should do to support a more accurate forecast of the need for new pipelines?

Mr. Peress. Yes. What we are suggesting and what the FERC is moving forward in doing is to by enhancing coordination between the gas and electric industries and by adding flexible services and pricing flexible services on the gas side. What they’re doing is they’re fostering competition amongst all different sorts of resources to address the individual needs of customers. And to the point that the gentleman to my right just made, there are multitude different options and alternatives that customers have to meet those needs unless and until there is a mechanism for comparing those and pricing those, then it’s difficult to make those decisions as detailed in my testimony.

So what the Commission is trying to do is to harmonize and to some extent foster competition amongst all those different resources so that we get a better sense of how to make least cost procurement decisions for long lived expensive infrastructure.

Senator Hirono. This is something that FERC is undertaking?

Mr. Peress. FERC has been moving in this direction through several dockets. What they most recently did was asked the industry to try to do this voluntarily. EDF has been deeply involved in that, as has the entire industry.

I can tell you that the progress is going very slow and I will characterize the fact that the pipelines, in general, are not seeking to change the current market design.

Senator Hirono. Thank you.

This question is for the full panel. In Hawaii the gas utility, which is not the largest utility entity in Hawaii, it’s the electric company, has proposed a project to import natural gas using a floating offshore terminal and an undersea pipeline to connect to its existing onshore pipeline network.

None of you may be particularly familiar with the details of the specific proposal, but can any one of you speak to the performance,
safety and cost of other natural gas projects using floating terminals or undersea pipelines? Can anybody comment on either kind?

Dr. PARFOMAK. Actually I can deal a little bit with LNG issues.

The advantages of using a facility of that type which is not onshore is that two fold.

One is of safety. It removes the—a large quantity of volume from populated areas. LNG at sea presents much, much lower risk to surrounding communities than a land-based LNG facility would, and LNG doesn't represent a hazard to the water necessarily because it wouldn't work to escape it. It would just evaporate or burn off, unlike an oil tanker might.

There are also cost and siting advantages. Obviously it’s a lot simpler and faster to develop a turn type system offshore than to develop a facility on land where you have to secure the property rights and go through a FERC siting process and take a lot of those considerations into account.

The primary cost then is a vessel that’s capable of doing that, and that’s considerably more expensive rather than just have a thermos which is moving LNG around and re-gasifying it onshore. You have to have all of that on a vessel that’s capable of moving around. And that, I haven’t done an analysis on the relative costs of that.

But there’s certainly, there have been a few LNG import terminals in Boston Harbor that were terminals that were not used for economic reasons but, you know, were sited and approved by the Federal Government.

Senator HIRONO. This is also not an inexpensive proposition because our gas company is looking to spend some $200 million in order to set up this system.

Thank you very much, Madam Chair.

The CHAIRMAN. Thank you, Senator Hirono.

Senator Franken.

Senator FRANKEN. Well, thank you, Madam Chair.

I am very concerned about the safety and integrity of our pipelines in the face of climate change. In coastal regions enhanced storm surges from sea level rise threaten the stability of existing infrastructure and elevates the risk of pipeline corrosion from sea water intrusion. In the Northern Great Plains extreme precipitation can lead to land subsidence that damages pipelines and causes devastating leaks and spills. And as I am sure the Chair of our Committee could tell you, in Alaska thawing permafrost can severely impair pipeline foundations.

But what concerns me the most is that many pipelines in the U.S. were designed, of course, without considering the impacts of climate change. In fact, according to several Federal studies many of the pipelines in Alaska that sit on permafrost were designed using climate conditions from the 50’s, 60’s and 70’s during which time we did not have as clear an understanding of climate change as we do today.

Mr. Black, you say in your written testimony, and I quote, “The pipeline industry believes it is important we’re proactively improving pipeline safety.” How does your industry consider climate change as you build new pipeline, or for that matter, repair existing pipeline?
Mr. BLACK. Thank you, Senator.

Any new and existing pipeline today needs to consider its operating environment. They need to understand the possibility of local flooding, of erosion and to take those issues into account whether it's in the design of the pipeline or the protection of an existing pipeline. So they're required right now to assess those risks, and if there's any hardening that needs to be done, to do it.

We had the flooding in Hurricane Sandy in that area the pipelines continued to operate in that environment. The only issue there was the power was cut to terminals and to pipelines, but the pipelines continued to operate safely. And then afterwards, learned lessons to be ready for the next time to make sure they're ready.

Senator FRANKEN. Thank you.

Mr. Peress, how can we make sure that our pipeline infrastructure is prepared for the impacts of climate change?

Mr. PERESS. The PHMSA, the Pipeline Hazardous Materials Safety Administration, actually has initiated a fairly significant proposed rulemaking to address safety for the interstate pipeline system. And in fact, one of the focal points of that is enhanced threat identification and enhanced data acquisition. It's a positive step forward that PHMSA is taking but far more needs to be done.

One of my fellow panelists spoke about safety management systems that are evolving and advancing in the context of threat identification, and it is important for the agency to continue to focus on this aspect. And really this is the first time in certainly recent memory, if not ever, that they have brought these sorts of programmatic elements to the interstate pipeline system, outside of just the most populated, densely populated areas. So it is happening but more needs to be done.

Senator FRANKEN. Thank you.

Mr. Eisenberg, I appreciate the discussion in your written testimony regarding the important role of steel in pipeline construction. In a recent study the National Association of Manufacturers found that natural gas pipeline construction contributed to 1,085 jobs at iron and steel mills.

By the way, Mr. McGarvey, I was a member of a multi-employer plan as a writer in the writer's guild and as an actor on TV, so I know those are jobs. Jobs are jobs. I, kind of, I got a little PO'd during the whole Keystone discussion about, “They're just temporary jobs.” Well yes, of course, every job in construction is a temporary job.

Anyway, I am back to you, Mr. Eisenberg. As you may know much of the iron ore or taconite that is used in domestic steel production comes from the iron range of Minnesota. Unfortunately for many years now our home grown steel has had to compete with illegally dumped steel from China. While I am happy the government has recently been successful in combating illegal dumping by imposing new tariffs on Chinese steel, we need to do more. Mr. Eisenberg, do you agree that we should be using domestic steel in new pipeline construction and not illegally dumped steel from China?

Mr. EISENBERG. Well, we obviously are concerned about dumping as well. Our trade team, led by Linda Dempsey in my office, we actively engage with groups like the Iron and Steel Institute, the
Aluminum Association, who are doing their best to try to level the playing field here to make sure that U.S. manufacturers have robust trade remedies available to them. We're hopeful that it will work itself out. There were some positive—there were some impacts there.

The good news is that you mentioned that our study had a thousand jobs. Well, those are real numbers based on real pipelines and real jobs, so we're still creating the jobs here. There's a lot of upside in building more pipelines for the iron and steel industry.

We'd obviously like to see as much of that in the United States as we can.

Senator FRANKEN. I obviously would like to see as much of that. So your answer is yes. You prefer American steel.

Mr. EISENBERG. We officially do not have a preference on that. I apologize. Our trade folks can follow up with you on that.

[The information referred to follows:]
Free and open market-based trade is often seriously distorted by governmental intervention and weak standards, particularly related to private property and commercial operations. In seeking to level the playing field globally for manufacturing in America, the NAM advocates initiatives that obtain genuine market access for U.S. manufacturing and that promote strong standards to protect private property and grow commercial activities in a predictable rule of law based system, including through trade agreements that offer mutually-beneficial commercial opportunities. Trade agreements should seek the elimination of market-distorting governmental intervention in international trade, and promote effective and enforceable compliance to agreed and transparent rules of fair competition and the protection of private property, including intellectual property, contracts and related commercial activities. In this process, the effectiveness of U.S. trade laws must not be diminished.

Forced localization barriers, including measures designed to protect, favor or stimulate domestic industries, services providers and/or intellectual property through requirements that distort commercial purchases and consumer choice. The barriers are proliferating, particularly in key emerging markets, and appear to violate fundamental national treatment provisions of the GATT and various WTO Agreements. Forced localization poses a serious and growing threat to manufacturing and jobs in the United States, increasing costs and security risks, blocking trade in manufactured goods, including in many innovation-intensive sectors, and undermining hard-won technology and productivity gains that have improved the competitive advantage of manufacturers in the United States. The NAM works with the United States government, other business organizations domestically and internationally and foreign governments to eliminate trade- and investment-distorting forced localization measures imposed on commercial entities.

The NAM believes all WTO member economics, including the United States, should comply with WTO agreements, including the Dispute Settlement Understanding.
Mr. Eisenberg. But obviously we are concerned about dumping, and we’d like to see trade remedies taken.

Senator Franken. Well, I am sorry you do not have a position on that, and I think we should be using American steel in our pipelines.

Thank you.
The Chairman. Thank you, Senator Franken.

Senator Lee.

Senator Lee. Thank you, Madam Chair, and thanks to all of you for being here today.

I am increasingly worried about the politicization of infrastructure projects. What we are seeing has allowed increasingly vocal anti-development environmental movement that has set its sights on run of the mill pipeline infrastructure projects.

This does not represent everyone in the United States. It does not represent even most who are concerned about the environment. It is a fringe movement, but it is a fringe movement not to be ignored. It recently killed the Northeast Energy Direct Pipeline and the Constitution pipeline which would have supplied natural gas to a number of states on the East Coast.

Now Utah is one of the fastest growing states in the country. Our population is expected to double by 2050. There are not a lot of states that can claim that particular distinction.

I am generally worried that the endless litigation that we are seeing and the political pressure campaigns that we are seeing waged by anti-development, fringe activists will inhibit Utah’s growth by preventing the construction of necessary pipeline infrastructure.

Without that and other types of infrastructure, you cannot have growth, growth that Utah would otherwise be experiencing.

So, Mr. Eisenberg, I would like to know. How can Utah grow if we cannot provide heat and reliable electricity for residents, particularly for our new residents moving into the state?

Mr. Eisenberg. Well, and I would add the manufacturing sector as well, right? I mean, we are the foundation of communities and we need the energy as well.

I mean, we all, kind of, get what’s going on here. But there’s a group of people right now meeting in Atlanta to try to figure out how to make this process more difficult, the pipeline siting process, the permitting process more difficult. That’s not going to change. There are—it’s just the world we live in.

It’s unfortunate because the FERC process that generally through laws, through the Energy Policy Act of ’05 and ’07, has gotten some remedies that will allow it to move a little bit quicker than some of the big infrastructure projects. But it’s two steps forward and one step back and now we’re dealing with some of these challenges that some of the folks in the industry are saying are adding years to the project. We just want to see them get done, right?

We have a real—we have a math problem. We need, we’re going to need, a lot more energy for the power sector and for industry in Utah and elsewhere over the next decade. We just need the pipes in place. You can regulate them. Do whatever you need to do, but
let's get them built so that we don’t have a real log jam for us. Because otherwise, you don’t have manufacturing.

Senator Lee. No, I think that is right.

Well, in addition to that, we have government regulations like the Clean Power Plan and MATS that are forcing a transition away from coal-fired electric power generation to natural gas.

The same groups that forced the transition to natural gas are now successfully scuttling the chief way to transport natural gas which is by pipeline. In other words, without pipeline infrastructure you cannot rely on natural gas as a way to generate electricity.

Mr. Eisenberg, I am at a loss over this one.

Mr. Eisenberg. We are as well. I mean, manufacturers need base load generation. We need power, right? And that generally comes from fossil fuels or nuclear power. And obviously there are other things taking up an increasing portion of the grid, but that’s it. That’s where you get base load power from.

We’re losing our nuclear power plants, we’re losing our coal-fired power plants and now we’re having this existential discussion about whether we need natural gas. We need natural gas in the manufacturing sector. We don’t have much left after that to keep us going, and if we don’t have it, we’ve got a real problem.

Senator Lee. Yet this problem is particularly acute in states like mine where the majority of the land is owned by the Federal Government. Other people in other parts of the country are dealing with a lot of regulatory hurdles, but those hurdles are magnified. They are compounded to a very significant degree in a public land state like mine.

In Utah, business looking to build a pipeline should expect to deal with some combination of the Advisory Council on Historic Preservation, the Bureau of Indian Affairs, the Bureau of Land Management, and the Army Corps of Engineers in addition to the EPA, the Fish and Wildlife Service, the Forest Service and the Federal Energy Regulatory Commission.

Mr. Black, could you walk me through what a permitting process in the West looks like and how this process could be improved, particularly within public land states like mine?

Mr. Black. Well thank you, Senator.

You’re right. There’s a lot of agencies that we need to work with, and we’re ready to do that but we hope we can do that in a timely manner.

Pipelines are subject to many of the same requirements as other Federal agency actions in the West such as a NEPA review or permitting across Federal lands, like you said. In practice, a pipeline has a minimal impact on the environment. A recent NEPA review of a large pipeline project found that the alternative would have less impact, the pipeline alternative would have less impact than all alternatives including no action. That’s because the energy demanded by the public will reach market by some other mode, by truck, by train, pipeline, barge. They don’t have barges in Utah, and pipelines have the least environmental impact.

The Federal workers at local offices in the West are, as we understand, generally working hard to complete that review work. We see permit reviews slow down when maybe Washington outside
forces get involved and/or when local field offices don’t have the resources to process those applications.

One recommendation is just to make sure those local field offices have enough resources, enough leeway to make the decisions that we need to be made to get those pipelines sited in Utah and elsewhere in the West.

Senator LEE. Thank you.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Lee.

Senator Warren.

Senator WARREN. Thank you, Madam Chair.

Last month the Massachusetts Supreme Judicial Court ruled that the state is not on track to meet its legal obligation to reduce carbon emissions from fossil fuels. And while Massachusetts has been a leader in deploying renewable energy, the Commonwealth continues to rely on fossil fuels for the majority of our power.

We think the path forward is clear. Massachusetts will need to aggressively expand renewable energy generation and increase conservation to meet our carbon emission goals. And yet, in New England big new pipelines have been proposed to bring natural gas into the region.

Now, state leaders like Attorney General Moira Healy, have questioned the need for these new pipelines and she has said and I quote here that, “the region is unlikely to face electric reliability issues in the next 15 years and additional energy needs can be met more cheaply and cleanly through energy efficiency and demand response.”

In fact, even the gas pipeline companies have testified to FERC that a long-term shift toward renewable energy calls the economic viability of new pipeline infrastructure into question.

So Mr. Peress, the trend toward cleaner forms of energy is just a fact. Given this trend away from fossil fuels, is investing in new, high capacity natural gas infrastructure a smart, long-term investment for New England?

Mr. PERESS. The evidence suggests that in New England it is not. And just to clarify the record, when Kinder Morgan canceled the Northeast Energy Direct project, they canceled it because they did not get enough customers to sign up to commit for that capacity over 20 years. It had absolutely nothing to do with opposition.

And of course, the reason they couldn’t get those customers to sign up for that capacity is because both the grid and state energy policy in New England and in Massachusetts are moving more toward more dynamic renewables, more energy efficiency and the resources that Attorney General Healey, through a detailed analytical analysis found to be the most cost competitive reason.

Senator WARREN. Let me pick up on that point about how it is that these pipelines are financed.

Traditionally they are financed by the companies that are actually going to burn the gas, industrial manufacturers, gas distribution companies, gas-fired plants, who enter into long-term contracts with the pipeline company. The companies finance the pipelines because they analyze the projected gas use over time and decide that the costs of the pipeline are more than offset by the subsequent
savings in gas prices that they are going to get from adding this new capacity. It is just basically how markets work.

Mr. Peress, have these companies been willing to pony up to cover the costs of big new pipelines in New England?

Mr. PERESS. They have not been willing to do so in New England because they found that it’s not in their economic interest to be paying for pipeline capacity every day when their needs are limited and only during certain specific periods of the year.

Senator WARREN. Right.

So these companies are saying they do not want to pay because they are not sure that these pipelines make any economic sense, but they would sure be happy to see the pipelines if the state would make the electricity customers pay the cost of these new contracts.

Now in Massachusetts, the Department of Public Utilities authorized the electric utility companies to finance these new pipelines on the rate payers’ dime even if they otherwise made no economic sense. The Department said the electric utilities could pass the cost off to Massachusetts families, who do not have the option to say no.

Mr. Peress, does it make sense to force families to pay for these pipelines when we might not need them and no one else is willing to pay for them?

Mr. PERESS. A 1.2 billion cubic foot pipeline would cost customers $14 billion over 20 years. And that’s money that’s paid for by people, by businesses and otherwise, under a scheme that tries to impose those obligations on someone other than the beneficiaries of that pipeline capacity. That, in our view, is the definition of a bubble, imposing costs on captive entities that are not the beneficiaries of that, those costs. So we would suggest that it does not make sense.

Senator WARREN. Alright.

And it is also very anti-market, I should add here. I appreciate your testimony.

Energy costs are a big deal in New England and throughout the country but giant pipeline companies that cannot make an economic case for these projects should not be allowed to force someone else to pay for them. As places like Massachusetts work to modernize our energy system and try to keep the prices affordable for families and businesses, it is urgent that we upgrade aging infrastructure and invest in clean technologies of the future. But we should keep the focus on that, not on a big giveaway to the oil companies and gas companies.

Thank you, Madam Chair.

The CHAIRMAN. Thank you.

I am so tempted to engage in debate. I do not know how we focus on the aging infrastructure if we cannot make sure those companies that build the pipelines have the certainty that they need to do exactly that.

I have already done second round. I want to give my colleagues an opportunity.

Senator King, you were next up if you would like to ask a second round of questions.
Senator King. I think to clarify this discussion there is a project or, I do not know quite how to characterize it, a proposal in New England that the taxpayer or the rate payers of the utilities take up the burden of the capital cost. The argument is that the pipeline has become, essentially, part of the electrical system because so much of our electricity is generated with natural gas.

I think that is what Senator Warren is talking about. The real question is who bears the risk?

The Chairman. Right.

Senator King. I think Senator Warren’s point is if the private sector is not willing to, does that tell you something about it?

In fact, our Maine Public Utilities Commission staff studied this question and just last week recommended against the state committing funds to the underwriting of the pipeline because they found it uneconomic.

I do not know the details of that study, but our commission will be looking at it. The issue is whether these costs should be borne by the customers or by the electric rate payers and how the risk is allocated.

The Chairman. Right.

Senator King. It is not an easy question.

The Chairman. Yes.

Senator King. And clearly we need the infrastructure, but are there other ways to skin the cat other than building an entirely new pipe, such as LNG storage, demand response, again because of the problem of, in some cases, in New England anyway, we have enough capacity today. But we will not have enough capacity in January and how do we deal with that?

The second question is what will we need in 20 years? I do not want to close the door to new infrastructure if, in fact, the demand in New England for natural gas continues to decline. That gets us to the question is what is our energy mix going to look like in 20 years? So it is not an easy question.

If you guys can find a question buried in there somewhere, you are welcome to it. [Laughter.]

Dr. Parfomak. Senator, the point you raised and the comment you made is a really insightful one. The notion that, to what extent is the natural gas system becoming part of the electricity system? And that’s the interdependency issue that I raised in my testimony.

Something FERC has been very, very interested in and has spent a lot of time thinking about in the context, in particular of New England, where it’s particularly evident, but in other places. And most of the, I shouldn’t say most of them, the major driver of future demand for natural gas growth is expected to be the electric power sector. And so, clearly, anything that happens in the electric power sector to reduce its requirements for natural gas in the future will mitigate the needs, especially peaking needs, for natural gas infrastructure as well.

So I just say that to point out that things like electricity storage, the efficiency of renewables, the requirement for natural gas to firm up renewables, all of that has a direct relationship to the issues that we’re discussing today.

Going forward I mentioned earlier that this is, it’s getting more complicated. The interdependency between electricity and natural
gas, especially in certain parts of the country like the Northeast, are yet another level of complication that I personally have to pay a lot of attention to.

If somebody comes up with an incredibly efficient electricity storage mechanism it could change this discussion radically, really affect how natural gas develops going forward and where it needs to go.

Senator King. But one of the problems is we are all trying to predict the future and the only thing we can say with certainty, that we will be wrong. [Laughter.]

But if we bet that there will be new alternatives and changes and then there are not, then we end up with an infrastructure shortage and particularly given the length of time it takes to permit new infrastructure. So there are no easy answers here.

But I think what I want to do is have more data and more understanding about long-term electricity demand. You mentioned, I think, Mr. Eisenberg, a 40 percent increase in demand nationally over the next 20 years.

Mr. Eisenberg. Next decade, actually.

Senator King. Next ten years. But then you have to get underneath that and say, okay, when is that happening and what is the necessity for additional infrastructure?

I keep coming back to this Christmas and Easter and the church. Could you build a tent on Christmas instead of building a church that is empty two-thirds of the time?

Mr. Eisenberg. I mean, the only thing that I think is worth adding to that is that the manufacturing end user is fundamentally different than the residential end user. And I think we, sort of, get caught up in, you know, families and homes and we absolutely should be but manufacturers use of energy is very, very, very different. And so our gas needs are going to be pretty consistent. So if you want us there, we need the pipes. I mean, it’s really that simple.

All the new, you know, there’s so much new manufacturing coming to the United States because of natural gas and because, particularly, of the feed stock elements of natural gas. But where is it happening? It’s happening in the Gulf. It’s happening in Texas——

Senator King. But the test of that is whether your members are willing to step up and sign 20 year take or pay contracts.

Mr. Eisenberg. Completely agree.

Senator King. To support the building of the infrastructure.

Mr. Eisenberg. Agree.

Senator King. That is the issue. Thank you.

Thank you very much, Madam Chairman.

Fascinating hearing, thank you for calling it.

The Chairman. Yes it is very good, thank you.

Senator Hoeven.

Senator Hoeven. Thank you, Madam Chairman, and thank you to our witnesses.

Today’s hearing focuses on the importance of oil and gas infrastructure and the ways in which energy is transported from the places where it is produced to where it is consumed. While energy
moves via truck, rail and barge, pipelines are the most efficient and the safest way to transport oil and gas.

One highlighted example. In North Dakota in September 2011 we were supplying almost a third of the natural gas we produce, 36 percent. The State Industrial Commission set a goal to get that down to nine percent by 2020. We are currently now down to ten percent. So we have gone from 36 percent down to ten percent and we produce 1.0 million cubic feet of natural gas per day. The biggest barrier that we had was building gas gathering systems and also then building the intrastate pipeline and then building the interstate pipeline because we not only wanted to capture that gas and get revenue for it, it also is better environmentally than flaring. So the key for us is getting through these barriers to building the pipelines whether it’s gas or oil or other products.

I will start with Mr. Black. To what extent does current Federal regulatory policy discourage this private investment? I mean, to what extent does it discourage it and what are the one, two or three things we can do to encourage that private investment, get it going?

Mr. Black. Well, you’re right, Senator, that it was a success building those additional pipelines to capture that gas that had been flared in North Dakota. There’s economic value that helps the people of North Dakota and then those who would be consuming that product. And of course, it’s further downward pressure on prices which helps consumers.

On the liquid pipelines we face issues as well of serving new areas, and we know there are benefits locally including North Dakota, your state, when we get additional pipelines built.

We need Federal Energy Regulatory Commission, FERC, policies that continue to encourage pipeline construction. We watch that closely; we need the federal agencies that need to give lands permits and construction permits to do that on a timely basis; and then we need states where liquid pipelines are sited under to make decisions timely.

A key issue in your state and you know well, Sand Piper Pipeline going east to the—through Minnesota, that would be a tremendous outlet for Bakken to get to market and would help consumers and workers in many places. But that process has really been lengthened beyond how it should be. And that has been, frankly, distorted.

We need states to make those decisions in order to help the Americans benefit like they can from pipelines.

Senator Hoeven. Talk for a minute about some of the new safety features because isn’t it the case if we can empower this investment and build the new gathering systems and pipelines, we are going to have new technology that is going to increase environmental safety?

Mr. Black. Well, as you said the pipeline is the safest mode. The product isn’t going to get to market if the pipeline isn’t built.

And like you said, rail, pipe—rail, truck, barge, some other mode. There are increased fatalities, increased releases associated with other modes, and we need to get them sited.
Senator Hoeven. So you would say building a pipeline is a win in terms of more energy, a win in terms of jobs and a win for the environment because it is the safest way to transport energy?

Mr. Black. Yes, Senator.

Senator Hoeven. Alright.

Mr. McGarvey, would you give me your thoughts in turn, and I appreciate your efforts to help us build the necessary energy infrastructure. Your thoughts both on what has to happen with Federal policy in this area, not just pipelines but transmission lines, road and rail. We need it all to have the energy infrastructure to move this energy safely from where it is produced and cost effectively to where it is consumed. What has to change, in your opinion, in Federal policy? And what are the ramifications for the work force?

Mr. McGarvey. Well, I would say, Senator, and it's crossed the line, Senator Warren just left, but we've been trying to get windmills permitted off Cape Cod and Martha's Vineyard for 20 years. We're ready, willing and able to build those. Can't seem to get those built or permitted either.

Again, I think it's going to take people on this Committee, that the Chairwoman has talked about this Committee working together to come up with sensible, long-term energy policy. There's been some legislation that's been passed on the permitting infrastructure from the United States Senate, the House, and I believe the President signed it.

There needs to be predictability on, you know, investments that the private sector is going to make, on work force development that we can participate in that drives the middle class, growing middle class economy in the United States.

And my great fear, as this energy revolution happens for us in the United States, if we're not able to take advantage of it, you know, again, we're going to cede our economic super power status to China because I don't see them getting bogged down in the discussion, in the environmental concerns, in looking out for the planet that we do. And rightfully so in the United States and looking at the long-term interest of the American people and in my case, the construction industry work force, both union and non-union. They all need jobs in the United States.

So policymakers, I think, have good ideas. I think it's coming to the middle, sitting down and putting together good, strong, long-term energy policy for the United States.

I'm hopeful with the leadership of this Committee and the people on this Committee that they can be a catalyst to work with the next Congress and the next Administration to really get it done because I think we're missing a golden opportunity if you look through from the industrial revolution forward. Here's this opportunity for this generation in the United States. Really take advantage of our natural resources and get that lift that our economy so desperately needs.

Senator Hoeven. And you see it as a significant job creator for the people you represent?

Mr. McGarvey. I will just tell you, Senator, you know, the job opportunities in the oil and gas sector and petrochem manufacturing it comes.
I mean, we never, sitting at a bargaining table arguing with people over the cost of wages and fringes in those industries because they're profitable industries when they get their infrastructure built. They're willing to pay. There's no lowest common denominator where we're scrounging for a fifty cent raise here or taking a ten cent cut back there.

These industries pay. And if you look across the United States, I just looked at some statistics yesterday about different age brackets and what the medium income is for people in those age brackets, it's unbelievable when you compare them to oil, gas and petrochem in construction.

When we're talking about where the middle class jobs in the United States are, they're in these industries. These people are willing to pay those prices and there's more than tens of thousands, hundreds of thousands of Americans who want to take advantage of the opportunities to get into the middle class through those industries and through those occupations.

Senator Hoeven. And that energy production makes us competitive in other key sectors, right, like manufacturing, construction, all those other industries that create good jobs as well, wouldn't you say?

Mr. McGarvey. Without question we're going, we're building a, right now, 50 miles from here we're building a gas and LNG export terminal for Dominion. I've got 2,500 people on that site.

Senator Hoeven. I see.

Mr. McGarvey. Right now we're going to build the Shell Franklin Cracker. There's another cracker we're looking at in West Virginia. There's another one in that loop that Senator Manchin was talking about.

Three crackers, potentially $20 billion of investment within 50 miles of each other that will create somewhere in the neighborhood of 2,500 high-paid, permanent jobs and about 20,000 construction jobs over a three or four-year construction period. The opportunities are endless.

Senator Hoeven. Good to hear. Thank you, Mr. McGarvey.

Thank you, Madam Chairman.

The Chairman. Thank you, Senator Hoeven.

I would like to thank each of you for your comments. What you have provided the Committee here today, I think, it has been very informative as Senator King has said. Very instructive.

I think we heard very clearly that when it comes to the jobs side of it, these energy jobs are good for families, good for our communities and good for the country.

I think we recognize that trying to divine the future is not easy around here, but Mr. McGarvey, you speak about putting together a longer-term vision, a view of our energy policy for this country.

We have been working as a Committee, I think, very constructively to try to move the ball on that and have advanced an updated energy reform piece of legislation that has moved not only through the Committee strongly but through the Senate strongly. We would like to go to conference on that so we can actually do more than just talk about how we move it through a process, but actually see some of these changes enacted into law.
It does not solve all of our problems, not by a long stretch of the imagination, but when you recognize that we have not done anything to update our energy policies for close to nine years now, you have to get started somewhere, sometime, and we think that that time is now. I think reminding folks that we are not done with this yet, that we need to go to conference and we need to work things out with the other body so that the President has something that he can embrace that will be good for the whole country.

A little bit of a self-serving comment here toward the end, but I think it does speak to the need to make sure that we are updating our energy policies on a more frequent basis, something that we just simply have not done. And when you don’t do it, you get behind.

Thank you for giving us a little bit of a forward look and what you are doing to help us in this decision-making process.

With that, the Committee stands adjourned.

[Whereupon, at 12:13 p.m. the hearing was adjourned.]
APPENDIX MATERIAL SUBMITTED

_______

(74)
Questions from Ranking Member Maria Cantwell

**Question 1:** In your testimony, you state “pipelines are an exceedingly safe way to deliver energy.” Can you elaborate on this point and discuss how crude oil pipelines compare to other modes of transportation, including rail, in terms of safety, the number of incidents, and the impact of those incidents?

**Answer:** Pipelines are indeed an exceedingly safe way to deliver energy. A barrel of crude oil or petroleum products delivered by pipeline reaches its destination safely 99.9999% of the time. While the Association of Oil Pipe Lines does not actively make comparisons between pipelines and other transportation modes, governmental and non-governmental bodies have studied the issue.

The U.S. Department of State in its 2014 Final Supplemental Environmental Impact Statement for the Keystone XL pipeline found the pipeline would result in fewer releases or barrels released compared to rail, tanker ship and even no action alternatives. The pipeline would also result in fewer personal injuries and deaths. Additionally, a pipeline would also result in lower greenhouse gas emissions than transportation by other modes or no action on the project.

Detailed supporting data may be found at https://keystonepipeline-xl.state.gov/documents/organization/221198.pdf.

A 2013 study by the Manhattan Institute determined “[a] review of safety and accident statistics provided by the U.S. Department of Transportation for the extensive network of existing U.S. pipelines—including many linked to Canada—clearly show that, in addition to enjoying a substantial cost advantage, pipelines result in fewer spillage incidents and personal injuries than road and rail.” Detailed supporting data may be found at http://www.manhattan-institute.org/pdf/ib_23.pdf.

**Question 2:** Before crude oil is transported in a pipeline, it is common practice to treat the crude oil to reduce its volatility and vapor pressure. Would you elaborate on how crude oil is processed to reduce its volatility, the reasons why crude oil is processed, and who sets the vapor pressure targets to be achieved during processing? Are there data available on the operational limits set for volatility and/or vapor pressure for all crude oil pipelines across the country? Have there been any studies or surveys examining and comparing this information?

**Answer:** Production from an oil well is often a mixture of crude oil, natural gas liquids (e.g. propane, ethane, butane), natural gas (methane) and water. Furthermore, the crude portion of the product is a varying mixture of lighter and heavier liquid hydrocarbons and condensates.
Production crude is processed using equipment most often called “heater treaters” or “stabilizers.” Both employ a combination of heat and pressure to separate the different hydrocarbon streams and water, as well as remove hydrogen sulfide or lower vapor pressure if desired.

There are various financial, environmental and transportation reasons to process production crude. Liquid and gas hydrocarbons frequently have different market values, providing a financial incentive to process and deliver separately the component hydrocarbon streams. EPA, States and localities may impose vapor pressure regulatory requirements to meet air quality goals. A lower vapor pressure will limit air emissions from storage tanks with floating roofs. Worker safety can also be a reason to lower hydrogen sulfide levels for handling purposes.

Hydrocarbons for shipment by tanker ship, rail or truck may also face vapor pressure or volatility limitations imposed by government regulation or required by the shipper or receiving customer. Pipelines transporting hydrocarbons for eventual later delivery by tanker ship, rail or truck may impose matching vapor pressure limits to ensure a seamless transition to those other modes of transportation. Similarly, a pipeline operator may impose a vapor pressure limit to meet the requirements of eventual tank storage locations.

Crude vapor pressures are not a safety issue for pipelines themselves. Fixed underground pipelines will not experience the potential for collision of a moving mode of transportation, such as a truck, train or ship. From an operational standpoint, pipelines are constructed and operated to meet American National Standards Institute (ANSI) pressure ratings. For example, ANSI Class 150 rated carbon steel pipe and flanges safely operate at up to 285 pounds per square inch (psi), ANSI Class 300 up to 740 psi and ANSI Class 600 up to 1480 psi. In all of these cases, the safe pipeline pressure ratings from 285 psi to 1480 psi is an order to orders of magnitude greater than crude vapor pressures commonly ranging from 9 psi to 16 psi. For these fundamental reasons, there appears to be little direct study of this issue and I am not aware of any specific examples.
BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

“OIL AND GAS PIPELINE INFRASTRUCTURE AND THE ECONOMIC, SAFETY, ENVIRONMENTAL, PERMITTING, CONSTRUCTION AND MAINTENANCE CONSIDERATIONS ASSOCIATED WITH THAT INFRASTRUCTURE.”
JUNE 14, 2016

RESPONSE TO QUESTIONS FOR THE RECORD
N. JONATHAN PERESS
DIRECTOR OF AIR POLICY, ENVIRONMENTAL DEFENSE FUND
JUNE 30, 2016

Questions from Chairman Lisa Murkowski

**Question 1:** You note in your testimony: “Natural gas is playing a role in transitioning our nation to a cleaner, lower carbon future.” Would natural gas be able to play that role if natural gas was “kept in the ground” and production of those resources effectively banned nationwide?

My testimony recognizes that increased use of natural gas is facilitating reductions in climate pollution. This beneficial attribute, however, is not a given into the indefinite future. As discussed in my testimony, for natural gas to remain a climate solution into the future, peer-reviewed and published scientific studies conclude that emissions of methane, a potent climate forcing agent, will need to be reduced across the natural gas production and supply chain. My testimony also explains that, for natural gas to facilitate renewable and clean energy deployment, natural gas pipeline operators must provide and price flexible delivery services as a complement to the operational profiles of such resources—flexible services which in most instances, are currently not available at any price. Thus, it is an open question whether production of natural gas in the future will continue to provide benefits to climate and clean energy integration.

**Question 2:** Do you recognize that delaying or canceling oil and gas pipeline projects can result in lost jobs for members of Mr. McGarvey’s unions?

My testimony addresses only natural gas pipelines and I have no expertise or experience relating to oil pipeline projects. With respect to “delaying” gas pipeline projects, my operative assumption is that once construction of a pipeline begins, it provides the same or similar amount of jobs with or without effect by delays. I am not aware of a single pipeline project that has experienced delays for which the foregoing assumption would not apply. I am not aware of a single natural gas pipeline than has been delayed for reasons other than the failure of the developer to obtain all required regulatory approvals, or the inability of the developer to find customers willing to execute long term contracts to pay for the proposed capacity.

I recognize that a proposed gas pipeline project which did not receive adequate customer interest or was otherwise not constructed would not provide the prospective jobs envisioned for construction of such canceled project. However, I am not aware of a single natural gas pipeline
project that was backed by arms-length long term contracts with credit worthy pipeline customers (paying for new pipeline capacity), which has been cancelled.

**Question 3:** Do you recognize that delaying or canceling oil and gas pipeline projects can result in higher costs for consumers, logistical challenges for moving resources, and even lower production?

My testimony addresses only natural gas pipelines and I have no expertise or experience relating to oil pipeline projects. As I stated above, I am not aware of a single natural gas pipeline that has been delayed for reasons other than the failure of the developer to obtain all required regulatory approvals, or the inability of the developer to find customers willing to execute long term contracts to pay for the proposed capacity. Likewise, I am not aware of a single natural gas pipeline project that was backed by arms-length long term contracts with credit worthy pipeline customers (paying for new pipeline capacity), which has been cancelled.

My written testimony cites recent FERC analysis which concludes that with the exception of the Marcellus production area of the northeast and transportation into New England, “regional price differences across the country were not large, a sign that midstream investments over the past 10 years have largely relieved natural gas transportation constraints.” It further concludes that “new capacity additions should significantly relieve transportation constraints in these regions by 2019 if projects that are planned and under construction are approved and completed by the scheduled in-service dates.” The magnitude and extent of recent pipeline capacity additions (see, Response to Questions from Ranking Member Maria Cantwell, Question 2), suggest that the problems expressed in the question are generally not materializing or, in the case of Marcellus takeaway capacity, are being resolved through normal market function.

**Question 4:** Are fuel oil and imported liquified natural gas more environmentally friendly and economic to run power plants in the Northeast than, for example, natural gas from the Marcellus?

Fuel oil, liquified natural gas (LNG) and/or new takeaway pipeline capacity to transport natural gas to supply power plants in the northeast each imply different economic and environmental outcomes. LNG and fuel oil provide limited “peak solutions” (which can be and are also provided by demand response) whereas new pipeline capacity is more of a long term, long-lived baseload solution.

The perceived constraints experienced in the northeast, and particularly in New England, however, occur for a limited number of days. In relevant regulatory proceedings in Massachusetts, it was generally agreed that the potential need for new capacity in New England is limited in time to a few peak days each year -somewhere between 10 and 30 days per year. But as discussed in some detail during the Committee’s June 14 hearing, new pipeline capacity is paid for every day of the year over a minimum of 20 years. Thus, resolving such a potential peak need with new pipeline capacity would obligate ratepayers for take-or-pay capacity that is unneeded (and may go unused) between 335 days and 355 days of the year. In effect, ratepayers would be paying for far more than they would be receiving, and stuck with that obligation for a generation or more.

Experience in New England over the past two winters and analysis by regulators, market participants and stakeholders (see e.g., Response to Question 5a, below), suggest that more limited peak solutions
are lower cost and less risky, especially insofar as new pipeline capacity would be induced by policy choices to impose 20 year or more cost obligations on captive ratepayers. Rational market participants, including electric generators, have determined that alternatives to investing in pipeline capacity are more cost effective and commercially viable.

At the burner tip, the emissions rate from combusting fuel oil is somewhat greater than that of combusting natural gas, whether sourced from the Marcellus or LNG. But because the need is limited to only a few peak days and hours per year, the comparative emissions impact has not been substantial to date. On the flip side, analysis conducted for the Massachusetts Attorney General’s Office, suggests that government-induced investment in additional pipeline capacity into New England could result in emissions in excess of regional climate policy goals (see, Response to Question 5a, below) due to its high cost and long periods necessary to pay off such investment.

**Question 5:**

a) Do you consider electric utility ratepayers to be customers for natural gas pipelines? Would they benefit from new pipeline capacity in constrained markets?

Electric utility ratepayers, in general, do not sign transportation services agreements (TSAs) to contract for “firm” transportation capacity with pipeline operators, nor do they schedule and receive gas deliveries from pipelines. Thus, electric utility ratepayers are generally not considered to be pipeline customers. Some TSAs are entered into by vertically-integrated retail electric utilities to serve their own generation and, subject to approval by state public utility commissions, captive retail electric ratepayers become obligors for the costs of those take-or-pay TSAs for firm gas transportation services. But only a relatively small proportion of pipeline flows are under firm transportation contracts with electric utilities.

Recent analysis in New England assesses whether and the extent to which retail electric utility ratepayers would benefit by being obligated to fund the cost of new pipeline capacity in a capacity constrained market. Several state agencies and consultants considering procurement of gas pipeline capacity by electric distribution utilities are finding that captive ratepayers would not benefit in comparison to the amount of cost and risk imposed upon them, or in comparison to alternatives. At the Maine Public Utilities Commission, staff and its consultants concluded that “it is unlikely that the benefits to Maine consumers will exceed the costs of pipeline capacity” Examiners’ Report, Investigation of Parameters for Exercising Authority Pursuant to the Maine Energy Cost Reduction Act, 35-A.M.R.S. § 1901, Docket 2014-00071 at 1 (Oct. 1, 2014) see also, the June 8, 2016 Examiner’s Report in the same proceeding (concluding that Energy Cost Reduction Contract proposals presented in the proceeding “are not in the public interest [and] are not reasonably likely] to be cost-beneficial”).

Likewise, analysis of a similar proposal in Massachusetts conducted for the Massachusetts Attorney General’s Office by its consultant questioned whether “price suppression” benefits to retail electric ratepayers would justify the up-front costs and risk imposed on ratepayers through significant long-term commitments to pay for pipeline infrastructure. They further observed that the additional pipeline capacity (as assessed in their analytical model), over its economic useful life, would result in long term greenhouse gas (GHG) emissions that exceed the region’s potential GHG reduction objectives, could result in a failure to meet the region’s climate goals and “could increase GHG emission-reduction compliance costs for electric ratepayers over
time.” Paul J. Hibbard and Craig P. Aubuchon, Analysis Group, “Power System Reliability in New England, Meeting Electric Resource Needs in an Era of Growing Dependence on Natural Gas,” at iii (Nov. 2015). Rather than obligate captive electric ratepayers for the cost of new pipeline capacity, the study found that “sustained investment over time in energy efficiency and demand response[,] has the greatest potential net consumer benefit.”

b) Generally, does additional pipeline capacity tend to reduce or exacerbate price volatility?

Additional pipeline capacity between any given two pricing points will tend to reduce price volatility. But a reduction in volatility does not necessarily justify an investment in new capacity, and can sometimes be harmful to incumbent capacity holders. As discussed in my testimony, pipeline customers voluntarily enter take-or-pay contracts for “firm” transportation capacity over long periods of time when they determine that the cost of the new capacity is less than the price differential between the supply and their delivery points (referred to as the “basis differential”), thus capturing an arbitrage opportunity across a transportation network. In the natural gas transportation market, that basis differential disappears the day the new pipeline capacity comes into service, as the capacity provides a new delivery pathway between the two pricing points to eliminate the basis differential.

Once the basis differential is diminished by new capacity, the incumbent market participants with capacity entitlements no longer derive value from their respective excess capacity holding(s) in a secondary market transaction (referred to as “capacity release”). In many instances, the incumbent capacity holders are utilities whose contract obligations are imposed on ratepayers, often gas distribution utility ratepayers. Thus, a government induced investment in capacity that eliminates basis and/or diminishes volatility may actually be detrimental to those who could otherwise derive value from volatility as a mechanism to offset their firm transportation contract obligations.

c) Do customers generally benefit from new pipeline capacity in constrained markets?

As stated in my testimony and discussed above, customers can choose to risk their capital by entering into long term take-or-pay contracts with pipeline operators with the expectation of capturing commercial benefits from new pipeline capacity in constrained markets. When pipeline developers apply for FERC approval for new capacity supported by such contracts, such approval is virtually always granted by FERC once route and environmental impact considerations are satisfactorily addressed, under the current FERC certificate process.

Conversely, where prospective pipeline customers are unwilling to make such voluntary commitments of their capital, it is a dispositive indication that they do not expect to accrue benefits in excess of the prospective contractual obligations and costs for new capacity. Rational benefit expectations, and accordingly, rational economic outcomes, tend to be illuminated by the willingness of customers to commit capital through such arms-length transactions.
d) Do you consider gas utility customers and industrial consumers to be customers for natural gas pipelines?

Many industrial users of natural gas chose to risk their capital by entering into transportation services agreements (TSAs) to contract for “firm” transportation capacity with pipeline operators and/or they schedule and receive gas deliveries from pipelines through secondary market transactions. Retail gas utility customers, in general, do not engage in transactions with pipeline operators, thus they are not customers for natural gas pipelines. To the extent approved by state public utility commissions, however, the cost of pipeline transportation services for gas distribution utilities are included in rates paid by gas utility customers.

e) Should gas utility customers and industrial consumers support new pipeline capacity financially? If so, why shouldn’t electric utility ratepayers?

In general, gas utility customers and industrial customers voluntarily elect to purchase natural gas and gas delivery services in either the wholesale or retail markets, and thus elect to incur costs for participating in the gas retail or wholesale markets to obtain supply and associated delivery services. Such a market participant understands that it is bearing the costs for obtaining natural gas and delivery service for use in a home or business. In large measure, voluntary market-based decisions efficiently direct investment and resource deployment.

Electric ratepayers, on the other hand, are not electing to participate in the natural gas wholesale or retail markets by purchasing and consuming electric power. In the organized competitive wholesale electricity market regions, any such decision to participate in the gas markets is an independent decision for a gas-fired power plant operator offering to sell electric energy and/or ancillary services into the wholesale electricity market. In a competitive wholesale electricity market, decisions to pay for new pipeline capacity are left to market participants based on competitive market principles. Costs for supplying fuel to competitive merchant power plant operators are not imposed on captive electric customers under policies implemented by FERC.

Retail electric customers in a competitive wholesale market have no use for pipeline capacity. Forcing retail electric ratepayers to bear the costs of pipelines in order to provide lower cost gas transportation services for a subset of energy producers (gas-fired power plant operators) within the electricity market, in the hopes that such price reductions will flow through to retail customers, amounts to market interference. FERC’s longstanding policy in overseeing wholesale gas and electricity markets recognizes that such out-of-market incursions and resulting price suppression harms competition and ultimately constrains innovation and investment by wholesale market participants, to the detriment of ratepayers. Even in the rare prior situations where electric reliability concerns were at play, the Commission’s policies seek to advance market-based solutions that are fuel neutral, and which do not unduly discriminate against competitive electric energy providers who do not use natural gas to generate power and would not benefit from the lower cost of socialized gas infrastructure borne by captive ratepayers.

Moreover, the electricity grid continues to deploy increasing amounts of lower cost renewables (which have little or no marginal cost of production), and is becoming more controllable and dynamic. Trends towards innovation and lower carbon resource deployment are, in some measure, competition for the market share of natural gas for power generation. In light of such competition, a government induced long term commitment of captive electric retail ratepayer
funding for long-lived pipelines is at risk of being uneconomic considering the 35 to 40 year amortization and depreciation period for new pipeline capacity. Rational wholesale electricity market participants are increasingly unwilling to risk capital and enter long term contracts for firm transportation (to support new pipeline capacity) because firm year-round transportation is becoming a worse commercial proposition going forward. As discussed above, lower cost, more nimble market-based solutions, if necessary, reduce the risk of saddling ratepayers with stranded cost obligations.

Questions from Ranking Member Maria Cantwell

**Question 1:** Your testimony references analysis assessing pipeline utilization during the polar vortex event on January 2014. Would you please provide a copy of that analysis with an explanation of its conclusions and methodology?

My testimony states that several pipeline systems, within the zone of perceived capacity constraint during the polar vortex, had large amounts of unused capacity. My assertion is based on the results of a detailed analysis of natural gas delivery scheduling and pipeline flows conducted by an energy industry consultant, Skipping Stone LLC, for the various large pipelines serving the eastern mid-Atlantic electricity market region (PJM Interconnection Eastern Hub, “PJM East”). Skipping Stone compiles and maintains a comprehensive database of pipeline system operations through its data center that is synced with interstate pipeline electronic bulletin boards using automated electronic data interchange protocols (EDI) to track and gather scheduled delivery quantities, pipeline natural gas receipt and delivery points, and final delivered quantities. They also maintain files containing nearly all firm transportation service agreements between pipelines and pipeline customers. Broadly stated, Skipping Stone’s database tracks pipeline transportation transactions for most of the country going back to 1994 relying primarily on operational data that FERC requires pipeline operators to post in order to maintain market efficiency and transparency.

For the month of January 2014 (i.e., during the polar vortex conditions), Skipping Stone assessed data for each of the following interstate pipeline systems serving PJM East: Columbia Gas Transmission (TCO), Dominion Transmission (DTI), Texas Eastern Transmission (TETCO), Tennessee Gas Pipeline (TGP), and Transcontinental Gas Pipe Line (Transco). By aggregating total contracted delivery quantities for each pipeline, it conservatively estimated total pipeline physical capacity (as a pipeline would not contract to deliver more natural gas, in the aggregate, beyond its physical capabilities). For each pipeline, the analysis reviewed timely scheduled and end-of-day deliveries for delivery points and physical locations where gas is delivered for consumption by the pipeline customer at the delivery location(s). To the extent that end-of-day deliveries were less than contracted delivery quantities, it is an indicator of unused capacity.

Key charts illustrating the results of the analysis are below (the full Excel data set is also being provided to the Committee). In sum, what the analysis shows is that two pipeline systems, Transco and TETCO, consistently scheduled and delivered more natural gas to locations serving end use customers than the sum of their respective contract capacities for most or all of the relevant time periods (e.g., January 6-7, 21-22, 27-28) - suggesting that they over-performed in delivering gas during the polar vortex event days. On the flip side, DTI and TGP delivered substantially less gas to locations serving end use customers than the sum of their respective
contract capacities for most or all of the relevant time periods—suggesting that they underperformed in delivering gas during the polar vortex event days. Notably spot market gas and electric prices skyrocketed during the coldest days, attributable in some measure, according to PJM, to pipeline natural gas delivery problems. While some might disagree with my and others’ opinions regarding whether and what caused certain pipelines to underperform, it is a fact that pipeline capacity, as measured against firm contracted capabilities into PJM East, was not fully utilized during the polar vortex event of January 2014.

For accuracy purposes, Skipping Stone and/or EDF reviewed the relevant data used for the analysis and the findings, with senior operational representatives of each of the pipeline systems analyzed, who confirmed the accuracy of the analysis. In the case of several pipelines, its representatives also provided us with additional scheduling and delivery data, such as no-notice deliveries, for completeness. [In this regard, it should be noted that assertions made by INGAA regarding the accuracy of my relevant testimony, in its letter to the Committee dated June 23, 2016, are incorrect. INGAA was apparently unaware that the referenced polar vortex pipeline utilization analysis was reviewed by and contains supplemental utilization data provided by the relevant pipelines.] The analysis has also been presented and extensively discussed, publicly and on the record, with PJM and its stakeholders, at the North American Energy Standards Board (including in open sessions with the relevant pipeline operators), at the Eastern Interconnect State Planning Council (hosted by the Department of Energy), and in FERC technical conferences and filings.

**Polar Vortex: Over-performing Pipelines**

<table>
<thead>
<tr>
<th>Transco - PJM Market Contracted Capacity vs. Scheduled Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Graph" /></td>
</tr>
</tbody>
</table>

---

83
Question 2: Please provide relevant data regarding the current capacity of the interstate natural gas pipeline system, the growth in that capacity over the past five years, and as projected into the future.

According to the FERC staff State of the Markets Report 2015 (March 2016, https://www.ferc.gov/market-oversight/reports-analyses/st-mkt-ovr/2015-som.pdf), the interstate natural gas pipeline system added 51 billion cubic feet per day (Bcf/d) of new capacity in the past five years and approximately 49 Bcf/d of capacity is proposed or planned to come online by 2018 to transport natural gas to markets. Energy consultant Skipping Stone LLC calculated for the Environmental Defense Fund that in 2011, total interstate pipeline contracted capacity was 198.3 Bcf/d based on reports from market participants required by FERC. Together, this implies system expansion of approximately 20% since 2011, and more than 50% expansion by 2018. The
foregoing is illustrative only as some of the buildout has likely displaced capacity from regions with declining production and/or resulted in some previously contracted capacity to go uncontracted.

In February 2015, the US Department of Energy estimated that the interstate pipeline system was expanded by 133 Bcfd between 1996 and 2013. (See, Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector, http://energy.gov/sites/prod/files/2015/02/f19/DOE%20Report%20Natural%20Gas%20Infrastructure%20V_02-02.pdf) In assessing the extent of need for additional pipeline capacity, DOE concluded that diverse sources of natural gas supply and demand “will reduce the need for additional interstate natural gas pipeline infrastructure” and that because of changing flow patterns, “higher utilization of existing interstate natural gas pipeline infrastructure will reduce the need for new pipelines.” The recent extraordinary growth of the interstate pipeline system does not imply that some additional new capacity would not be economic or cost-effective. As set forth in my written testimony, however, there are opportunities to better utilize existing capacity and in many instances, there are lower cost solutions other than pipeline customers taking on or otherwise imposing the long term cost of additional new capacity on captive ratepayers.

**Question 3:** Your testimony references recent analysis of annual capacity factors for natural gas-fired electric power generators as it relates to natural gas delivery needs for this sector. Would you please provide a copy of that analysis with an explanation of its conclusions and methodology?

Natural gas-fired electric generators are becoming an increasingly large customer of the pipelines. My written testimony asserts that “it is critical to reliable, efficient and cost-effective operation of the grid for pipelines to provide and price short-term (even within day) flexible delivery services” to satisfy the evolving needs of power generators and help direct investment in the optimal mix of reliability resources (e.g., as between pipeline capacity, storage and/or demand response). In fact, the vast majority of electric power generators operate at different levels of output over the course of a day, when they are called on to generate electricity.

The following data and tables were compiled by Skipping Stone LLC using EIA data for electric generating unit operations in 2015. The tables aggregate multiple units at a generating facility into a “Generation Site.” The lower the load factor per Site, the more likely it is that any such Site has unstable gas consumption patterns within a given day and/or from day to day.
Table 1

<table>
<thead>
<tr>
<th>Load Factor Range</th>
<th>Statistics Regarding Makeup of Electric Generation Characteristics by Capacity Factor Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MWH of Generation by Group</td>
</tr>
<tr>
<td>Low-Side</td>
<td>172,521,058</td>
</tr>
<tr>
<td>High-Side</td>
<td>172,521,058</td>
</tr>
<tr>
<td>80.00%</td>
<td>100%</td>
</tr>
<tr>
<td>60.00%</td>
<td>80%</td>
</tr>
<tr>
<td>40.00%</td>
<td>60%</td>
</tr>
<tr>
<td>20.00%</td>
<td>40%</td>
</tr>
<tr>
<td>0.00%</td>
<td>20%</td>
</tr>
<tr>
<td>Totals</td>
<td>1,796,217,917</td>
</tr>
</tbody>
</table>

As set forth in Table 1, only 42 of 4% Generating Sites (i.e., 8.5% of Sites) operate between an 80% and 100% load factor (from a gas use perspective). The other 90%+ of gas-fired generators operate at much lower load factors.

Table 2

<table>
<thead>
<tr>
<th>Load Factor Range</th>
<th>Statistics Regarding Makeup of Electric Generation Characteristics by Capacity Factor Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MWH of Generation by Group</td>
</tr>
<tr>
<td>Low-Side</td>
<td>1,256,333,907</td>
</tr>
<tr>
<td>High-Side</td>
<td>1,256,333,907</td>
</tr>
<tr>
<td>60.00%</td>
<td>100%</td>
</tr>
<tr>
<td>40.00%</td>
<td>80%</td>
</tr>
<tr>
<td>20.00%</td>
<td>60%</td>
</tr>
<tr>
<td>0.00%</td>
<td>40%</td>
</tr>
<tr>
<td>Totals</td>
<td>1,256,333,907</td>
</tr>
</tbody>
</table>

As can be seen above in Table 2, approximately 70% of Generating Sites and generating capacity operate below a 60% load factor and annually, in 2015, operated at only a 28% load factor in the aggregate.

As discussed in my written testimony, the need for power generators to obtain varying flows of natural gas during a given day is increasing in a more dynamic and renewable electric grid. For gas-fired power generators to cost-effectively participate in a peaker and more variable system that increasingly requires more rampability, natural gas pipeline transportation providers need to provide and price the flexibility necessary for reliability. In general, interstate pipelines are neither providing nor pricing flexibility under the present market design, which is heavily weighted to payment for inflexible capacity.
July 22, 2016

The Honorable Lisa Murkowski
Chairman
Committee on Energy and Natural Resources
United States Senate
304 Senate Dirksen Office Building
Washington, D.C. 20510

RE: AGA Comments on ENR June 14, 2016 Oversight Hearing: Examining Oil and Gas Pipeline Infrastructure and the Economic, Safety, Environmental, Permitting, Construction and Maintenance Considerations Associated with that Infrastructure

The American Gas Association (“AGA”) appreciates the opportunity to provide these additional comments for the record in the above-referenced committee oversight hearing related to natural gas infrastructure. AGA generally supports the clarifications provided to the committee by the Interstate Natural Gas Association of America ("INGAA") by letter dated June 23, 2016 responding to and seeking to correct some misleading and inaccurate statements made in the testimony of the Environmental Defense Fund ("EDF") witness before this committee. Like INGAA, AGA welcomes the opportunity to participate in an informed and balanced discussion regarding how pipeline transportation services could be made even more efficient than they are today. AGA files these further comments, however, to address some of the EDF testimony, including its discussion regarding higher pipeline utilization. AGA believes that relevant facts were omitted regarding how the natural gas industry works and the significant industry safety concerns that must be considered when proposing increased pipeline utilization.

Natural gas is a clean, domestic, abundant, efficient and affordable resource, making it the perfect foundation fuel to help strengthen America’s economic recovery, meet our environmental challenges and improve our overall national security by reducing our dependence on foreign energy sources. These strong natural gas supply fundamentals coupled with a robust and reliable natural gas delivery system suggest that over the next decade, a range of demand scenarios can be met by a diverse and responsive natural gas supply market at affordable price levels.

1 The AGA, founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 72 million residential, commercial and industrial natural gas customers in the U.S., of which 95 percent – just under 69 million customers – receive their gas from AGA members. AGA is an advocate for local natural gas utility companies and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international gas companies and industry associates. Today, natural gas meets more than one-fourth of the United States’ energy needs. For more information, please visit www.ag.org.
AGA member companies own and operate local natural gas distribution pipeline systems that typically receive natural gas supplies that have been transported on the interstate pipeline system from supply regions. These local distribution systems deliver the natural gas directly to residential, commercial and industrial customers under locally-regulated rates, terms and conditions, which typically include obtaining the natural gas supplies for use by customers in equipment in their homes and businesses, as well as the delivery of that natural gas supply to such homes and businesses. The availability of abundant and affordable natural gas supplies, and the safe and reliable transportation of such gas supplies is critical to gas utility businesses and their regulatory obligations to serve.

**Investments in Natural Gas Infrastructure.** The U.S. pipeline and storage network is highly reliable as a result of accessible production from virtually all major North American gas producing regions and delivery via an integrated pipeline transportation network across the United States. While unusually severe weather events have the potential to disrupt the natural gas system, outages of firm pipeline transportation and storage services have been rare.2 In sum, the natural gas production, transmission, storage and distribution systems in this country support the most flexible and resilient natural gas market in the world. Local natural gas distribution utilities, including AGA members, work every day to maintain the safe, efficient and reliable operation of their systems, investing billions in our nation’s pipeline and distribution infrastructure.

Even so, in certain regions of the country, infrastructure development will need to be addressed to meet increased demand. However, the timing of when that may need to occur will be regionally-dependent. The increased reliance by power generation on the use of natural gas should be, where necessary, accompanied by an appropriate expansion or development of new natural gas infrastructure to meet the needs of gas-fired generation, while preserving reliability for all of the customers on the gas system. Additionally, there needs to be a resolution of who will pay for the costs associated with such infrastructure.

**Financing Natural Gas Infrastructure.** Under FERC’s Certificate Policy Statement,3 which sets forth guidance for evaluating proposals to certificate new pipeline construction, the threshold requirement for new projects is that the pipeline or project developer must be prepared to financially support the project without relying on subsidization from existing customers. To ensure a project is economically feasible, the interstate pipeline or project developer seeks financial support for the project by entering into long-term contracts with prospective customers for firm transportation service. FERC’s policy, which has developed over the years through orders and opinions, places value on ensuring that transportation contracts are in place, but also balances public benefits against potential adverse consequences by giving appropriate consideration to: the enhancement of competitive transportation alternatives, the possibility of overbuilding; subsidization by existing customers; the applicant’s responsibility for unsubscribed

---

2 While the 2013-14 polar vortex impacted large parts of the country and pushed the natural gas markets to unprecedented levels, the entire natural gas value chain was able to meet the demand due to extensive system planning and the flexibility and efficiency of our nation’s natural gas infrastructure, including, but not limited to, the use of storage.

capacity, the avoidance of unnecessary environmental disruption, and the unneeded exercise of eminent domain. Through initial open season processes, a project sponsor obtains valuable data in order to properly size the project. Additionally, under the policy, the pipeline must make efforts to minimize the project size and its environmental impacts. FERC thoroughly weighs the benefits and the adverse impacts of a project before it makes a decision to approve a project.

Gas utilities are often the anchor customers that sign up for new capacity that supports the development of a new pipeline project or expansion. Since gas utilities are obligated by public service regulations to reliably meet the natural gas supply needs of their customers, they develop comprehensive plans and manage assets, operations and contractual portfolios that include physical contracts for natural gas supplies, natural gas transportation, and natural gas storage. Gas utilities necessarily hold amounts of existing pipeline capacity that reflect their applicable resource planning and customer needs, but they also routinely make long-term commitments to purchase new long-term pipeline capacity including, but not limited to, circumstances where there is growth in customer demand as well as to enable gas purchases from diverse supply locations. While new capacity is more expensive than the cost of existing capacity, it is often determined to be the best available resource to reliably meet the needs of the gas utility’s customers.

Contrary to EDF’s general testimony, for gas utilities, the decisions to make interstate pipeline capacity commitments are hardly “schemes,” but rather are determined based on extensive integrated resource planning and analysis required by the underlying nature of gas utility businesses to deliver reliable natural gas supplies to their customers under a regulatory obligation to serve. Moreover, while gas utilities are able to make long-term pipeline contracting decisions and commitments, such decisions are subject to the review and approval of state regulators. In many cases, there is no advance approval of pipeline capacity contracts or natural gas commodity purchases, and gas utilities – utilizing a thorough and well-documented analysis as well as customer, system and other asset-based knowledge and expertise – take the risk on these decisions until the applicable prudency review occurs. Decisions which are not adequately justified by the gas utility during these proceedings are not simply passed through to ratepayers.

In this manner, gas utilities, as natural gas market participants, have contributed to and have enabled the construction of the vast interstate pipeline transportation systems that exist today and those that may exist in the future. AGA believes that the overarching regulatory structure, as currently set up by FERC under the Natural Gas Act – allowing the market to determine which projects or expansions ultimately will be built – is well-established and ensures efficient and reliable natural gas transportation services.

**Enabling reliability.** As an overarching point, AGA emphasizes that reliability of service for customers is a priority for both the natural gas and electric industries. AGA observes, however, that gas-fired generators that have only contracted for interruptible transportation service on pipelines may find that interruptible transportation capacity is unavailable during severe weather or outage events, because the capacity is being used by firm transportation service customers. Of concern are certain situations where, even with available capacity, the gas system experiences significant pressure drops due to generators drawing large quantities of gas that were not scheduled, potentially causing problems for all gas customers on the system. In
In this regard, such gas-fired generators need to assess whether, for reliability purposes, they should procure firm services.

Additionally, innovative and flexible delivery services are offered by pipelines, and new services can also be discussed so that the gas-fired generators can accommodate their needs to access gas supplies in a timely manner in response to electric dispatch orders. Some of these existing services cater to large swings in gas consumption, for situations where, for example, a gas-fired generator is dispatched in response to variable energy resources, such as solar and wind cycling on and off. In some cases, gas utilities may be able to provide services to meet the needs of gas-fired generators in managing large swings in consumption. While not endorsing any particular service offering as the solution for meeting the needs of the electric generation market, these services provide examples of how individual pipelines and gas utilities, as applicable, are creating and developing services to meet the particular needs of the markets they serve. Since many gas services are offered and/or can be designed to help meet the needs of gas-fired generators using existing infrastructure, it is important that such gas-fired generators consider subscribing to such services as they seek to provide their own reliable power generation services. Significantly, however, these gas services must be aligned with the market incentives for gas-fired generators to enter into contracts for those services, when needed, without the creation of cross-subsidies.

**Pipeline capacity utilization**. EDF’s testimony discusses opportunities to enhance system efficiency by better utilizing existing pipeline capacity and cites to a 2015 Department of Energy (“DOE”) study which states that average capacity utilization for the interstate pipeline system between 1998 and 2013 was only 54%. Like INGAA, AGA submits that this information, without more, is misleading. While AGA supports pipeline system optimization for efficiency, AGA believes that pipeline systems organically already do what EDF suggests, including their use of many tools such as interruptible services and FERC’s capacity release mechanism. Given that the DOE study regards a nationwide average capacity utilization number, reliance on it is misplaced because, as INGAA points out, a nationwide average is not a relevant data point to use to assess the efficiency of the pipeline network. To the contrary, pipeline capacity that may appear to be “unused” in an off-peak period does not necessarily mean that the capacity is available. For example, as daily pipeline operations constantly change, capacity that appears “used” during one period of time, could be capacity that a pipeline is using as it raises pressures to ramp up before the start of a Gas Day. Or, capacity that appears “unused” may be earmarked by the pipeline for use by a no-notice service customer that may

---

not have scheduled such service on a particular day, or it may be used by the pipeline to provide intra-day flexibility for its customers. Generalized information, without a proper context, can thus be misleading. AGA agrees with INGAA’s submitted testimony that it would take a very fact-intensive, pipeline-specific examination to be able to determine on any particular day why and whether specific pipeline capacity is “unused.”

Gas utility residential and commercial space heating customer demand is seasonal and gas utilities make resource contracting decisions that include, but are not limited to, the use of interstate pipeline transportation capacity. Given this, the use of contracted-for firm interstate pipeline capacity by gas utilities is largely seasonal in nature. However, this does not mean that the system is inefficient. In many instances, gas utilities engage in the optimization of such temporarily available interstate pipeline capacity through the use of FERC-recognized Asset Management Arrangements (“AMAs”). In this regard, the “unused” capacity is actually released to an asset manager, usually an expert marketer, who is then able to use the capacity under the terms of the arrangement during the course of and pursuant to the regulations regarding an AMA-related capacity release. This, AGA submits, is an example of how the natural gas market and FERC policy have developed to work in an efficient manner, to optimize and avoid unnecessary duplication of pipeline facilities, while at the same time affording gas utility and other pipeline customers the ability to contract to meet their reliability needs. Through the use of AMAs, existing available interstate pipeline capacity is being put to use and, in many cases, is certainly not standing idle. Indeed, FERC recognized that AMAs provide significant benefits to a variety of participants in the natural gas and electric marketplaces and to the secondary natural gas market itself. Of these benefits, FERC found that AMAs result in an overall increase in the use of interstate pipeline capacity, as well as facilitating the use of capacity by different types of customers in addition to LDCs. And, AMAs benefit the natural gas market by creating efficiencies as a result of more load responsive gas supply, and an increased utilization of transportation capacity.

Additionally, as INGAA observes, since interstate pipeline capacity is not fungible, what appears to be “unused” capacity in one region cannot simply be transferred to another region where there may be constraints. Therefore, looking at a nationwide average of pipeline capacity utilization does not provide any meaningful information in this regard. Moreover, as new supply sources are developed, it has necessarily been the case that pipelines that were built to transport natural gas from a particular producing region to a market area, have had to address changing supply and demand centers and natural gas flows. This is simply the result of a fluid and ever changing natural gas market. But, it does not mean that the pipeline system and the market within which it functions are inherently inefficient.

---

6 While AMAs may be fashioned in a myriad of ways, the asset manager uses the released capacity to serve the gas supply requirements of the releasing shipper, and, when the capacity is not needed for that purpose, uses the capacity to make releases or bundled sales to third parties, including gas-fired electric generators.
7 “The goal of the changes adopted by the Commission herein is to make the capacity release program more efficient by bringing it in line with these developments in today’s secondary gas markets.” Order No. 712 at P 121.
8 Order No. 712 at P 122.
**Safe pipeline operations are crucial.** AGA believes that any discussion regarding increased pipeline capacity utilization must include safety considerations. Significantly, to operate pipelines as EDF suggests, i.e., to match hourly profiles, would require operating them above Maximum Allowable Operating Pressure ("MAOP") in some instances, and would be a practice which AGA cannot support. While it may appear to some without the expertise in operating a natural gas pipeline system, that increasing the delivery capacity of an existing pipeline, by adding more gas volumes or increasing the pressure, may be an option, AGA submits that this should not necessarily nor automatically be considered to be an acceptable or safe alternative to building new or expanding pipelines. At a high level, pipelines have an MAOP based on the diameter, yield strength, wall thickness and several other factors. These factors dictate the absolute maximum pressure, and therefore the absolute capacity, that should be running through the pipeline at any time. This MAOP level, as well as any incident exceeding it, must be registered with the U.S. Department of Transportation. Pipeline operators, including gas utilities, thus stay well below that level to ensure the safety and the long-term health of their pipeline system and to avoid any potential for a catastrophic effect on pipelines and surrounding communities. In fact, in light of the prescriptive regulations being proposed by the Pipelines and Hazardous Materials Safety Administration ("PHMSA") in the proposed gas transmission safety rule, AGA believes that it is likely that, going forward, MAOP safety concerns will be an even greater concern to and significantly limit and impact the decisions of gas pipeline operators. Importantly, that safety considerations were not addressed in a discussion about increasing pipeline utilization which AGA believes is a significant omission.

**NAESB’s review of pipeline scheduling practices.** The North American Energy Standards Board ("NAESB") Gas-Electric Harmonization ("GEH") Forum was reactivated to address, at the request of FERC in Order No. 809,\(^2\) to explore the potential for faster, computerized scheduling when shippers and confirming parties all submit electronic nominations and confirmations, including a streamlined confirmation process, if necessary, and to file such standards or a report on the development of such standards with FERC by October 17, 2016. AGA actively participated in all of the GEH Forum meetings held to date. Most of the presentations which were largely educational in nature and/or the concepts were not fully fleshed out and/or the proposals went beyond the ability of NAESB as a standards, not a policy organization, to address. AGA indicated in comments filed with NAESB several times that, given the overall record of the robust discussions that took place during the meetings, as well as a review of the survey, the focus of the GEH Forum process should only be on the concepts/issues from the GEH Forum that are responsive to both FERC’s and the NAESB Board’s direction and have strong, multi-quadrant support for further investigation. AGA stated that, in consideration of the overall record, the process has not yielded strong support from the gas and electric industries on any item for NAESB to present to FERC for further standards development.

Thus, while increased pipeline scheduling flexibility have been discussed, including at NAESB by FERC’s direction, AGA reiterates that the foundation for providing needed reliability

---
for all users of a pipeline system is having adequate infrastructure. In constrained areas, no
increase in communications, scheduling or confirmation frequency will have a material impact
on moving more gas into a pipeline and make-up for the lack of needed infrastructure. Simply
put, without the necessary and adequate infrastructure in place to transport natural gas supplies
from the wellhead to end-users, some energy consumers will not receive the benefits of the
Nation’s abundant, clean and affordable natural gas supplies.

Methane emissions. With respect to concerns regarding methane leaks from across the
natural gas value chain, AGA submits that gas utility efforts to upgrade and modernize their
systems has contributed significantly to the decline in natural gas system emissions. The 2016
U.S. Environmental Protection Agency (“EPA”) Inventory of U.S. Greenhouse Gas Emissions
and Sinks released in April showed that emissions from local distribution systems decreased by
74% from 1990 to 2014. In fact, a nationwide field study by Washington State University in
2015 found that as little as 0.1% of the natural gas delivered nationwide is emitted from local
distribution systems.

In closing, AGA reiterates that the abundance of clean, efficient and affordable natural
gas makes it a foundation fuel for America now and for many years to come, and its use assists
in meeting national policy objectives of reliable, affordable and clean energy. Reliability of
service and safe operations are overarching priorities for AGA member companies. The U.S.
natural gas system and market structure work well and FERC’s policies encourage the most-
efficient use of interstate pipeline capacity. AGA supports continued discussions regarding how
to make the system more efficient in a way that does not negatively impact reliability for existing
firm customers who rely on the capacity to perform their business obligations, and also in a way
that does not impact safe pipeline operations. The increased reliance by gas-fired generation on
the use of natural gas should be, where necessary, accompanied by a consideration of an
appropriate expansion of the natural gas infrastructure that is needed to meet the needs of gas-
fired generation – including a resolution of who will pay for the costs associated with such
infrastructure – while preserving reliability for all of the customers on the gas system.

Thank you for the opportunity to provide this additional testimony for the record.

Respectfully submitted,

George Lowe
Vice President, Federal Affairs
American Gas Association
400 N. Capitol Street, N.W.
Washington, D.C. 20001
Email: glowe@aga.org
American Petroleum Institute
Statement for the Record
U.S. Senate Committee on Energy and Natural Resources
“To Examine the Oil and Gas Pipeline Infrastructure and the Economic, Safety, Environmental, Permitting, Construction, and Maintenance Considerations Associated with that Infrastructure”
Tuesday, June 14, 2016

The American Petroleum Institute (API) is the only national trade association representing all facets of the oil and natural gas industry, which supports 9.8 million U.S. jobs and 8 percent of the U.S. economy. API’s more than 640 members not only produce and refine the resources that help America run, but API’s members also transport them straight to consumers by pipeline, rail, and barge. Specific to the subject matter of today’s hearing, API’s members include integrated and non-integrated pipeline companies with transmission lines that carry oil and petroleum products, such as gasoline, diesel and jet fuel; natural gas liquids, such as propane, butane and ethane; and natural gas.

The oil and natural gas industry is committed to safely transporting our products and to the goal of zero incidents. Natural gas and liquids interstate pipelines are one of the safest modes for transporting energy across the country delivering 99.999 percent of product without incident. Pipeline operators strive for continued improvement to ensure the U.S. has the safest, most robust pipeline network in the world. As a demonstration of that commitment, operators invest billions each year to evaluate, inspect, and maintain pipelines.

Since 1924, API has been the industry standards development organization that promotes reliability and safety through the use of proven engineering practices. The API standards process is accredited by the American National Standards Institute (ANSI), the same body that accredits similar programs at several national laboratories. As part of API’s ANSI-accredited process all API standards are reviewed on a regular basis to ensure they remain current and developed in an open and transparent process which includes subject matter experts from academia, government, industry and other relevant stakeholders. Our robust and open process explains why governments at all levels have confidence in our methodology. Of API’s 685 standards, 240 are referenced in federal regulation, including 40 of our pipeline standards. Most recently, we completed standards to improve the overall safety culture of industry and to better detect cracks and leaks, and enhance emergency response.

Access to affordable energy gives U.S. manufacturers a competitive edge, putting downward pressure on power and material costs for producers of steel, chemicals, refined fuels, plastics, fertilizers and numerous other products. Adequate energy infrastructure, including pipelines, is critical to providing that competitive advantage. According to a recent study from the Boston Consulting Group (BCG), U.S. industrial electricity costs are now 30-50 percent lower than those of our foreign competitors. BCG also found that American manufacturing costs are 10 to 20 percent lower than those in Europe and could be 2 to 3 percent lower than China’s by 2018.

Expanding America’s energy infrastructure will also be an engine of economic growth and job creation. According to a study by IHS, oil and gas infrastructure investments could generate up to $1.15 trillion in new private capital investment, support 1.1 million new jobs and add $120 billion on average per year to our nation’s GDP over the next decade. In addition, much of this expansion will be performed by the safe, well trained employees of America’s building and construction trades who will benefit from these middle-class sustaining jobs.
Consumers will also benefit. While there is broad support for energy infrastructure in the U.S. -- eighty percent of
American voters support increased development of national energy infrastructure -- some regions are at higher risk
for increased costs than others. A recent survey by the New England Coalition for Affordable Energy shows that
nearly 80 percent of residents in the six New England states are concerned about the affordability of energy. This
should be no surprise. In 2015, New England residents paid up to 53% more for their electricity than the national
average, in large part due to inadequate energy infrastructure, which equates to more than $400 more per family. All
six states are in the U.S. top ten for electricity costs and natural gas prices. Without new energy infrastructure, New
England could continue to be at a disadvantage, not just for families but for businesses, as well.

New England is less than a day’s drive from the abundant natural resources contained in the Marcellus shale, and
expanded pipeline infrastructure could address both cost and reliability concerns. A separate report from the New
England Coalition for Affordable Energy shows that failure to invest in natural gas and electricity infrastructure could
increase energy costs to homes and businesses by $5.4 billion, reduce disposable income by more than $12.5 billion,
and result in 167,000 jobs lost or not created, just between 2016 and 2020.

America’s emergence as a global energy leader has fundamentally reordered the world’s energy markets. It has
elevated the importance of North American energy production and reduced what had been the once-dominant roles
of OPEC and Russia. This unique American moment is the result primarily of American ingenuity and technological
advancements in hydraulic fracturing and horizontal drilling. This “energy renaissance” has resulted in cost savings
for American consumers and good paying jobs here at home; provided renewed opportunities for the U.S.
manufacturing sector; and strengthened our economy and strategic alliances abroad.

Greater availability of domestic oil and natural gas has helped drive down prices for gasoline, electricity, and home
heating. A recent report by IHS demonstrates the savings from increased production, estimating that average U.S.
disposable household income was $1337 higher in 2015 because of lower home energy costs and other savings linked
to unconventional development.

Keeping affordable, reliable energy moving to families and businesses requires infrastructure -- pipelines, storage,
processing, rail and maritime resources. Shovel-ready projects abound in the energy sector because of innovations
that unlocked the shale energy revolution. As energy production has moved to areas like North Dakota and
Pennsylvania, expanding our pipeline system will generate construction jobs and ensure we move energy efficiently,
maximizing the economic benefits of our status as the world’s leading producer of oil and natural gas.

Embracing our energy renaissance will bring the benefits of affordable, reliable energy, good paying jobs,
manufacturing growth, and economic benefits. Infrastructure is key to unleashing these opportunities, and API
agrees with the vast majority of American voters that we should continue to develop our country’s energy
infrastructure. It can and should be done safely, with the best technology in the world and ever improving industry
standards that protect U.S. citizens and our shared environment.
American Petroleum Institute
Statement for the Record
U.S. Senate Committee on Energy and Natural Resources
Hearing to examine oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction, and maintenance considerations associated with that infrastructure
June 14, 2016

We appreciate the committee’s attention to infrastructure issues and would like to provide some additional information to the committee addressing several of the issues raised during the hearing.

**Crude Oil Volatility**

The topic of crude oil volatility was referenced several times, and particularly in reference to oil moved in pipelines. Crude oil is made up of hydrocarbons, including low boiling point hydrocarbons (“light ends”). These include methane, ethane, propane, butane, and pentane. These hydrocarbons are an important source of fuel for home heating, barbeques and portable stoves, water heaters, dryers, refrigeration and many other appliances, and also as feedstocks for industrial manufacturing, chemicals, plastics and pharmaceuticals. The utility of crude oil lies in the fact that it must be combustible to serve its purpose.

“Stabilization” is the process of separating lighter components from heavier components in a crude oil stream. Crude oil transported in pipelines does not need to be stabilized, but it may be for a variety of reasons including to meet customer specifications, to maintain a particular volume of product in a pipeline or for other operational reasons. Stabilization takes place throughout the supply chain, from the wellhead to centralized facilities to distillation units and refineries. Some form of stabilization takes place on all produced materials as they move through the supply chain towards their end uses as separated, refined products. Even if crude oils were “over-stabilized” they would remain a flammable liquid.

Crude oil does not have to be stabilized before being transported in a pipeline. There are a number of factors that may determine whether a company decides or their shippers require that a batch of crude oil must be stabilized prior to being shipped.

- Commercial: The pipeline company or the shipper of the shipment may have commercial requirements that may limit the volatility of crude oil.

- Volumetric: A pipeline company may choose to move to crude oils that have lower gas content to ensure that it can achieve the required amount of liquid delivery.
- Environmental: Crude oil is stored in storage tanks that are kept at atmospheric pressure. Environmental regulations stipulate a maximum vapor pressure for floating roof tanks to guard against vapor loss and maintain integrity of the tank.

- Performance: Certain pipelines may perform more efficiently if they have less gas in the crude oil. Excessive amount of gas may cause cavitation or vibrations in pumps.

Safety is a core value of the oil and gas industry, and we continually strive for zero incidents. Last year, DOT finalized enhanced standards for tank car design and Congress further improved upon those standards in the FAST Act. API has been supportive of efforts to update crude oil tank car standards to include additional design specifications that can increase the safety of those cars, and we continue to work with the Department and the railroads to ensure the new rules are implemented effectively.

We also work to ensure the highest standards of safety in our pipeline operations. Pipeline operators spend billions each year to evaluate, inspect, and maintain pipelines. In 2015, the pipeline industry completed the development of a framework for Pipeline Safety Management System (Pipeline SMS) designed specifically for pipeline operators. This API Recommended Practice (RP), RP 1173, was a culmination of a two-year effort by pipeline operators, state and federal regulators, and other engaged stakeholders collaborating to advance to the goal of zero incidents. Along with ensuring that safety is the top priority, the RP has also been recognized by both NTSB and the Pipeline and Hazardous Material Safety Administration (PHMSA) for the positive contribution it has made in furthering safe operations throughout the industry.

**Natural Gas Pipelines and Consumer Costs**

Natural gas plays a crucial role in maintaining the cost-effectiveness and reliability of electricity in many parts of the country, particularly in the Northeast. The six New England states are all in the top ten for highest energy costs in the country.¹ These costs are driven by natural gas pipeline capacity constraints, particularly during seasonal peaks in natural gas demand. Multiple studies have demonstrated that New England must establish new and expand existing means for natural gas delivery to reduce pipeline congestion and increase natural gas capacity available for electricity generation during these peak demand periods.² New England’s electricity grid manager, ISO-NE, has summed up the problem and the solution effectively:

---

“[W]intertime access to natural gas has grown tight over recent years because the regional fuel transportation network has not kept up with demand from both generation and heating sectors. These natural gas constraints have led to grid reliability challenges, emission increases during winter, and spikes in wholesale electricity prices. The situation is exacerbated by other market dynamics: low gas prices during most of the year except winter are putting economic pressure on coal, oil, and nuclear resources. By 2020, resources representing about 30% of regional capacity have committed to cease operation or are at risk of retirement. Taking their place are even more natural-gas-fired units—currently, more than 60% of new generation being proposed by private investors across the six states will be primarily or exclusively fueled by natural gas... Various ISO studies indicate that, ultimately, improving the natural-gas-delivery infrastructure in New England—through added pipeline capacity, increased supplies of liquefied natural gas (LNG), improved gas storage solutions, or some combination—will have the most impact on addressing the reliability, price volatility, and negative emission impacts during winter.”

During the hearing, a portion of the discussion focused on the “deliverability of gas” as compared to natural gas pipeline capacity. In reality, the deliverability of natural gas is largely dependent on the capacity and storage available to meet a given amount of demand. While natural gas can be delivered to the region via LNG import facilities. That gas must then be redistributed by truck or via the existing pipeline system. While LNG imports can provide for short-term needs, they are viewed by utilities and ISO-NE as a short-term fix due to a lack of LNG storage and the associated costs.4

Regarding deliverability and interstate pipelines; deliverability of natural gas is priced through different contract structures. For example, a customer who has signed up for a “firm” contract is guaranteed delivery of natural gas up to the contract maximum. If a customer has signed up for an “interruptible” contract, then gas deliveries can be interrupted. The price of the “firm” contract is more expensive than the price of the “interruptible” contract; however, the “firm” contract guarantees delivery while the “interruptible” contract does not. The price that consumers pay for natural gas is a function of the type of capacity and fuel contracts to which their LDCs and the power generators are subscribed. In an effort to improve the reliability of power during the periods of peak demand, electricity distribution companies have proposed purchasing a portion of the pipeline capacity being created by new pipeline projects. Like all infrastructure investments made by utilities whose rates are set by state utility and service

4 Id. page 23. “LNG deliveries into New England are highly variable. In October 2014, natural gas futures—market prices for delivery into New England during the winter of 2014/2015 were among the highest prices in the world, attracting many LNG tanker ships to the region and roughly doubling LNG deliveries from prior years. As of October 2015, New England futures prices for winter 2015/2016 had fallen by half, but with global LNG prices below $5/MMbtu, LNG cargoes were still expected to be attracted to the region. However, the exact amount of LNG available in New England in this and future winters remains uncertain.”
commissions, customers will bear some of the cost of these improvements. However, according to National Grid, one of the EDC’s seeking capacity on the Access Northeast project in New England, electricity customers are projected to save an average of $1 billion each year during normal weather conditions and even more during severe cold weather. Clearly the costs of building more capacity outweigh the continued strain that high energy prices are putting on families and consumers in the region.

Opponents of pipeline projects have raised the argument that the approval of multiple projects will lead to an “overbuild” of capacity in particular regions. That concern is exaggerated. First, not all projects approved by FERC proceed to construction. Second, pipeline projects are not built “on spec”. They are developed after using an open season mechanism to determine if there is a sufficient market demand for new capacity. Projects then require long-term subscriptions for the newly developed capacity before they begin construction and operation. Third, as part of the permitting policy for each project, FERC reviews the project’s design, including the capacity being proposed, the route, and the rates being proposed to ensure that the development of the project is in the “public interest.” While utilization rates may vary from pipeline to pipeline and seasonally, the concern that pipelines will be overbuilt in a particular area and then underutilized is unfounded.

**Natural Gas and Renewable Energy**

Trends toward greater utilization of renewable power sources are being forced through state-level mandates which add cost to consumers. However, even with this trend, investment in natural gas pipelines is needed in order to serve power generation. Greater natural gas utilization supports expanded use of renewable power sources. While renewable sources like solar can help meet demand during the day, there must be generation capacity available when the sun sets and electricity demand is still peaking. Natural gas generation is the only generation source able to cost-effectively and efficiently provide the fast-response and ramping needed to maintain grid reliability with increased integration of intermittent sources. Unlike renewable resources such as wind and solar where their function is to generate electricity, natural gas provides space heating for residential, commercial and industrial customers as well as feedstocks into industrial applications. Due to the varied uses of natural gas, pipelines are also needed to serve residential, commercial and industrial customers.

A large portion of renewable growth, however, is supported by subsidies – including the extension of the investment/production tax credits for renewable sources- and state mandates that may carry their own consumer costs. If these subsidies were to be removed, renewable

---

growth in the short-term would not be as high. Additionally, if state renewable mandates were to be removed, renewable growth in the long-term would slow.

Despite claims to the contrary, natural gas generation is the most cost-competitive source. While fuel costs are zero for efficiency and renewable generation, the capital costs to develop energy efficiency and/or renewables are more expensive over the life of the asset than the fuel cost savings, especially when compared to natural gas-fired electricity generation.

In the Northeast specifically, in order to meet both ambitious renewable energy goals and provide for electric reliability, the region needs to support the development of more natural gas delivery capacity in the form of new pipelines. A 2015 study by the U.S. Department of Energy on the impacts of growing electricity demand, estimated that more than 3.2 Bcf/d of additional natural gas pipeline capacity will be needed to serve the projected demand in the Northeast between now and 2030. Multiple projects are in development to help fill this need. However, opposition to development has led some public officials to purposefully attempt to delay the approval and construction of this critical infrastructure. Doing so could harm the consumers — including New England families, manufacturers and industrial users - that would benefit from access to these resources.

It is clear that there is a strong, and in the case of natural gas — growing, demand for fossil fuels. Our nation’s delivery infrastructure is a critical component of the oil and gas supply chains. The further development of these projects, in particular natural gas pipelines, has clear economic benefits. These projects create jobs, provide low cost power and heat for millions of consumers, generate tax revenue for states and municipalities and are allowing the U.S. to fully take advantage of the tremendous oil and gas resources we possess. We appreciate the Committees attention to continued growth in our industry and hope that these comments are instructive.

---

June 23, 2016

The Honorable Lisa Murkowski  
Chairman  
Committee on Energy and Natural Resources  
United States Senate  
304 Senate Dirksen Office Building  
Washington, DC 20510

Dear Chairman Murkowski:

On behalf of the Interstate Natural Gas Association of America (INGAA), I would like to thank you for convening the June 14, 2016 oversight hearing on oil and natural gas pipeline infrastructure. INGAA appreciates your recognition of the importance of pipeline infrastructure to fulfilling the principles that are at the heart of your Energy 20/20 blueprint. INGAA asks that this letter be included in the record of the committee’s oversight hearing on pipeline infrastructure.

INGAA represents natural gas transmission pipeline operators in the United States and Canada. The pipeline systems operated by INGAA’s 24 member companies are analogous to the interstate highway system, transporting natural gas across state and regional boundaries.

The United States’ network of more than 300,000 miles of natural gas transmission pipelines is the envy of the world. This pipeline system is integrated with the Canadian interprovincial pipeline system and increasingly with cross-border markets in Mexico. The connections provided by natural gas transmission pipelines enable American consumers to enjoy the benefits of the world’s most robust and competitive natural gas market and the supply abundance created by the shale revolution.

The regulatory model created by the Federal Energy Regulatory Commission (FERC) pursuant to the Natural Gas Act made this possible. The United States would be unable to capture these benefits fully without nondiscriminatory open access to pipeline transportation and the ability to construct pipeline and storage infrastructure in response to market demand. Both have resulted from FERC’s policies.

INGAA welcomes constructive input on how pipeline transportation services and pipeline infrastructure can be made more efficient and market responsive. The testimony of Mr. Jonathan Peress of the Environmental Defense Fund (EDF) addressed what he characterized as “opportunities to update natural gas wholesale market rules to better align with contemporary supply and demand dynamics, which in turn, will clarify the extent of need and commercial considerations attendant to new interstate natural gas pipeline capacity.” While INGAA appreciates the spirit in which the EDF testimony was offered, it is important to correct several misleading and inaccurate statements that form the basis for its conclusions and recommendations.

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA  
20 F STREET, NW, SUITE 450 • WASHINGTON, DC 20001
Pipeline capacity utilization

The EDF testimony highlighted pipeline capacity utilization on a nationwide basis as indicative of opportunities to enhance the efficiency of the pipeline system. In support of this, EDF cites Department of Energy data indicating that capacity utilization of interstate natural gas pipelines averaged 54 percent between 1998 and 2013. This is a misleading statistic. Natural gas pipelines are designed to meet peak contractual demand and not annual average demands. Pipeline capacity that is unused in an off-peak period does not equate to additional pipeline capacity in a peak period.

By analogy, many highways are built to handle peak rush-hour demand; just because a highway is nearly empty at 2:00 a.m. is not indicative of the road capacity needed at rush hour. Likewise, a lightly traveled rural highway does not negate the need for more roads in a metropolitan area with daily traffic congestion.

Nationwide averages of natural gas capacity utilization are not indicative of the efficiency of the natural gas pipeline network. First, a significant part of the demand for natural gas in the United States is for residential and commercial space heating, which is seasonal. In order to serve incremental heating demand during winter months, local natural gas utilities rely on interstate pipeline capacity, along with underground storage and on-system peak shaving resources, to deliver the necessary gas supplies. Local gas utilities therefore contract for pipeline capacity with their legal obligation to serve residential and commercial customers on peak winter days in mind, not simply based on average annual system demand. Consequently, it is no surprise that local gas utilities do not fully utilize their contracted pipeline capacity on a year-round basis.

Furthermore, these seasonal patterns of utilization by local gas utilities provide the principal foundation for a vibrant secondary market for pipeline capacity. Local utilities “release” their unused pipeline capacity to the market where it is utilized by third parties, including electric generators and the intermediaries that supply natural gas to the generators. This promotes efficiency by putting the pipeline capacity in the hands of those who value it the most when it is unneeded by its primary holder.

In addition, pipeline capacity is not a fungible commodity that can be redeployed elsewhere when needed. For example, the fact that there is underutilized pipeline capacity along a corridor in the Midwest does nothing to relieve a capacity constraint in the Northeast. Pipeline flows change as our nation’s economy evolves and as supply and demand centers shift accordingly. For example, the massive shifts in supply and demand associated with the shale revolution, the increasing use of natural gas for electric generation and emergence of export markets for natural gas have caused significant shifts in pipeline flows. It is not surprising that there are some pipeline corridors that are experiencing declining utilization and others that are increasingly utilized to the point of needing expansion.

The EDF witness also asserted that natural gas pipeline capacity in the Northeast was not fully utilized during the polar vortex event of January 2014 and that this demonstrates a lack of efficiency in how pipelines are operated. EDF’s assertion is based on misunderstandings about how both shipper nominations and pipeline operations affect the pipeline capacity that might appear to be unused on any given day. For example, capacity might appear to be unused from a nomination standpoint, but in fact be dedicated to providing no-notice service that was not utilized by the customer on that day. Or the pipeline capacity might have been
used to provide a shipper with intra-day flexibility which was not reflected in the daily usage calculations. Or a shipper might have reduced its initial nomination or might have been unable to find natural gas at its receipt point. In summary, it would take a very fact-intensive, pipeline-specific inquiry of a pipeline and all of its shippers to determine why pipeline capacity was not used on a particular day.

Comparisons to wholesale electricity markets

In his oral statement, the EDF witness suggested that the structure of wholesale natural gas markets is “comparatively dumb” relative to that of organized wholesale electricity markets. This blanket statement disregards material differences in the physics of natural gas and electricity, the economics and structure of the respective industries, and the applicable legal and regulatory frameworks. Such statements do little to promote an informed discussion of how to improve natural gas/electric power coordination.

Capacity versus deliverability

The EDF witness suggested that wholesale natural gas market design has not kept pace with the evolution of the United States energy market because interstate natural gas pipelines sell “capacity” and not “deliverability.” He suggests that pipelines be obligated to offer non-ratable, short-term deliveries of natural gas to electric generators and others, with such customers presumably being obligated to pay a market rate for such services only when and if the services are needed.

While EDF’s testimony provides little detail on this alternative construct for pipeline services, several points come to mind.

First, the secondary market for natural gas pipeline capacity already would appear to provide the short-term “deliverability” that the EDF witness stated is needed. Pursuant to FERC’s rules, firm pipeline shippers can release capacity to third parties on a short- or long-term basis, and such transactions that are a year or less in duration can be priced by the market. Third-party intermediaries can package pipeline capacity and natural gas supply to create services that meet the short-term needs of electric generators and other natural gas consumers.

Second, assuming the availability of pipeline capacity, interstate natural gas pipelines already provide customers with flexibility beyond that which they are obligated to provide under their FERC tariffs. In other words, when firm customers are not utilizing their contractual entitlement to pipeline capacity, pipeline operators can use the available capacity to provide customers with enhanced flexibility. Still, this flexibility can be offered on a firm basis only if adequate infrastructure is available to provide the service.

Third, pipeline deliverability cannot exist without pipeline capacity. In EDF’s model of a wholesale natural gas market designed on the basis of pipeline deliverability, who would be obligated to pay the fixed costs of the pipeline capacity needed to provide the desired level of pipeline deliverability? How would this fit with a model in which individual shippers have contracted with pipeline operators for firm pipeline capacity sufficient to meet their particular needs? Or is EDF proposing a fundamental restructuring of the economic model for
natural gas pipelines to resemble the model for electric transmission in which network costs are socialized across all users of the transmission network on a widespread regional basis?

Fourth, while EDF's testimony focused largely on the interface between natural gas pipeline services and gas-fired electric power generators, it is important to recognize that electric power generation represents only about one-third of the United States' end use market for natural gas. The other two thirds of the market are residential and commercial heating, and industrial natural gas consumers. Shippers representing these consuming sectors hold an even larger share of firm natural gas pipeline capacity because electric generators in many parts of the country hold little or no firm pipeline capacity. How would this restructuring affect these customers whose firm contracts have supported the expansion and maintenance of the existing pipeline network?

In sum, EDF's proposal raises many more questions than it answers. What is most worrisome is that this proposal would appear to discard the economic model that has made it possible for the United States to construct, operate and expand the natural gas pipeline and storage market that has supported the world's most competitive natural gas commodity market and enabled most consumers (save for those in pipeline-constrained markets such as New England) to reap the benefits of the shale revolution.

Establishing the need for new pipeline capacity and who pays for it

The shippers on interstate natural gas pipelines are as diverse as the multiple uses of natural gas. They include natural gas producers and marketers, industrial consumers, natural gas local distribution companies, electric utilities, merchant power generators, and new liquefied natural gas terminal operators. The common threads are that interstate natural gas pipelines are obligated to provide non-discriminatory open access to all shippers and that these shippers demonstrate market demand and enable new pipelines to be financed by entering long-term, firm contacts for pipeline capacity.

This model has worked remarkably well in facilitating timely, market-responsive expansion of the pipeline network and accountability on the part of pipeline companies and firm shippers, while at the same time avoiding protracted debates over cost allocation. FERC's policies supporting this model represent a significant improvement over the prior model in which the need for new pipeline capacity and the winners and losers in providing new pipeline service were determined by administrative litigation. The commercial market is much better at divining the need for a pipeline and for choosing between competing proposals than an administrative law judge choosing between competing lawyers. The "policy refinements" suggested by the EDF witness — "whereby FERC undertakes a more robust and detailed assessment of the extent and duration of market need for new interstate pipeline capacity" — would represent a return to that ineffective and discarded model.

In addition, the EDF witness suggested that it is bad policy for state regulators to approve utilities' choices to contract for pipeline capacity to meet the needs of their customers. He stated "[I]n the absence of a voluntary transaction between capacity developers and market participants risking their own capital, further capacity expansion would only occur in the event policymakers impose long-term financial obligations on captive ratepayers for costly long-lived infrastructure."
This is a remarkable statement. It expresses little confidence in state regulators’ ability to make reasoned choices, based on the record that the retail ratepayers served by state-regulated utilities will or will not benefit from such long-term investments.

The EDF's witness' statement ignores the long history of state regulators making such choices with respect to the long-lived, capital intensive infrastructure investments that must be made in order to render safe, reliable and reasonably priced utility service. This is true for natural gas local distribution companies’ (LDCs) proposals to build and replace distribution pipelines and contract for gas supply and interstate natural gas pipeline services. It also is true for franchised electric utilities’ proposals to build distribution and transmission lines and generating stations, and to contract for fuel supply and purchased power.

State-regulated utilities play a critical role as aggregators of retail market demand for pipeline projects, and it is totally appropriate that retail customers reimburse LDCs or electric distribution companies (EDCs) for the costs of pipeline commitments. Customers are safeguarded by the requirement that a state public service commission approve such contracts entered by LDCs or EDCs. We reject the EDF witness’ assertion that such commitments by regulated utilities are, by definition, uneconomic and injurious to competition.

There is an irony to the EDF witness’ prescription, because the pipeline infrastructure that serves natural gas-fired generators in competitive wholesale power markets was developed in large part to meet the needs of state-regulated natural gas LDCs. During off-peak periods, LDCs sell their excess pipeline capacity into the secondary market, thereby enabling power generators to obtain pipeline capacity for which they have not otherwise contracted. Were it not for the states’ decisions to authorize regulated LDCs to support the development of pipelines through long-term firm contracts, there would have been little or no pipeline capacity to enable natural gas-fired generators to emerge as a competitive force in wholesale power markets.

Thank you again for providing a forum highlighting the important role of energy pipelines in supporting our nation’s economy and fulfilling our energy policy aspirations. INGAA welcomes a robust discussion about how to expand and optimize our natural gas pipeline infrastructure and the services offered by pipeline operators in response to our dynamic energy economy. Still, it is important that this discussion is grounded in the facts, with an appreciation for the operational and economic realities of building and operating pipelines and appreciation of the multiple interests that must be considered as we examine paths forward.

Respectfully,

Donald F. Santa

cc: The Honorable Maria Cantwell
July 8, 2016

Vin Electronic Mail

Darla Ripchensky, PMP
Chief Clerk
U.S. Senate Committee on Energy and Natural Resources
304 Dirksen Senate Office Building
Washington, DC 20510

Re: Oil and Gas Pipeline Infrastructure and the Economic, Safety, Environmental, Permitting, Construction and Maintenance Considerations Associated with that Infrastructure, Oversight Hearing – June 14, 2016

Dear Ms. Ripchensky:

The following is provided for the record of the committee’s oversight hearing, referenced above, in the interest of providing the committee with facts relating to certain assertions made by the Interstate Natural Gas Association of America (INGAA) by letter dated June 23, 2016.

INGAA’s letter states that it seeks to correct misleading and inaccurate statement that it suggests were in my testimony. In several instances, its contentions are directly controverted by facts and conclusions within readily available reports and/or orders issued by jurisdictional agencies including the Department of Energy (US DOE) and Federal Energy Regulatory Commission (FERC). While we respect INGAA’s viewpoints and willingness to engage in civil discourse on policy matters, productive policy outcomes are better informed by facts and fact-based analysis.

INGAA apparently disagrees with my assertion that energy customers would benefit from market refinements to increase pipeline utilization above the recent average of 54%. According to INGAA’s letter, my citing of average natural gas pipeline capacity utilization from a recent US DOE report is “misleading” and “not indicative” of the extent of need for natural gas pipeline expansion. INGAA’s perspective, however, might be better informed from a review of the US DOE report explicitly referenced in my testimony in support of my opinion that increased utilization “can avoid costs for some new pipeline capacity.” (At p. 2; referencing, US DOE, Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector, February 2015).
The US DOE report analyzes "the potential infrastructure needs of the U.S. interstate natural gas pipeline transmission system under several future natural gas demand scenarios." One of US DOE’s four over-arching conclusions (at p. vi) unequivocally states,

**Key Finding 2: Higher utilization of existing interstate natural gas pipeline infrastructure will reduce the need for new pipelines.** The U.S. pipeline system is not fully utilized because flow patterns have evolved with changes in supply and demand. Increased demand for natural gas in the scenarios considered by this analysis does not lead to larger increases in pipeline capacity because, in some regions, available existing pipeline capacity is projected to be used before expanding existing pipelines or building new capacity. Given the cost of building new pipelines, finding alternative routes that utilize available existing pipeline capacity is often less costly than expanding pipeline capacity. While seasonality of demand requires pipelines to accommodate peak natural gas demand, the incremental demand from new base load natural gas generation in the scenarios considered in this analysis tends to be relatively uniform across the year. It is easier to accommodate this relatively uniform incremental natural gas demand on existing pipelines than it would be to accommodate demand that coincides more strongly with peak demand.

It is irrefutable that there is opportunity to better use existing pipeline capacity and doing so is a lower cost option in comparison to deploying new capacity, notwithstanding the characterizations in INGAA’s letter. [INGAA is correct, however, in its observation that capacity needs are locationally specific. Both the US DOE report and my testimony recognize that locational considerations have bearing on the extent to which increased demand can be met by existing underutilized capacity.]

The FERC also acknowledged, in a recent order, the benefits of enhancing natural gas transportation system efficiency and is in the midst of actions to foster better utilization of the existing pipeline system. My written testimony (at p. 2) cites FERC Order 809 (April 15, 2015) whereby it directed the industry, under the auspices of the North American Standards Board (NAESB) to explore enhanced and flexible scheduling services that would "promote more efficient use of existing pipeline infrastructure and provide additional operational flexibility to all pipeline shippers [customers]." In its Order on Rehearing in the same docket (September 17, 2015), the Commission reiterated its perspective on the benefits of enhancing utilization of the pipeline system and directed NAESB to expedite its discussions to reach agreement on such market enhancements, after NAESB reported delays in the start of its deliberations.

EDF, INGAA and its members participated in the FERC proceedings and in the resulting NAESB deliberations, which were recently completed. At the conclusion of the process, the NAESB Board voted to proceed with the development of new scheduling standards, designed to facilitate more flexible scheduling services and delivery arrangements, between pipeline operators and their customers. Notably, all of the pipelines that participated at NAESB voted against moving forward with the development of such flexible scheduling standards, notwithstanding that the provision and utilization of the new delivery services would be voluntary.
Enhanced scheduling standards are advancing at NAESB because NAESB member pipeline customers and others overwhelmingly see the benefits of fostering greater utilization of existing pipeline infrastructure despite the resistance of pipeline operators whose perspectives are represented in INGAA’s letter. [The NAESB voting record can be found https://www.naesb.org/pdf/naesb_060216_060216_results.doc]. Conspicuously, INGAA’s letter provides no reasoning or explanation for its apparent misgivings with actions to enhance pipeline utilization.

With respect to pipeline utilization, INGAA’s letter reveals that it is poorly informed about how certain pipelines serving the northeast were utilized during the January 2014 polar vortex event. In response to a Question for the Record from Ranking Member Maria Cantwell, EDF’s entire polar vortex pipeline utilization analytical file is now in the record of this oversight hearing, and its methodology and conclusions are explained. A false discussion of areas where INGAA’s letter errs in its critique of our analysis can be found in my response to the QFRs.

Notably, INGAA apparently is unaware that the pipeline utilization analysis and its data files were reviewed by management representatives from each of the analyzed pipeline systems. Several of the operators provided EDF’s consultant, Skipping Stone, with quantitative scheduling and delivery data (including for the no-notice deliveries that INGAA mistakenly asserts are omitted) to ensure that the analysis for their respective system was complete. All of the relevant pipeline operators affirmed that the data used in the analysis is accurate. The analysis was presented and extensively discussed, publicly and on the record at the North American Energy Standards Board (including in open sessions with the relevant pipeline operators), at the Eastern Interconnect State Planning Council (hosted by the Department of Energy, in which representatives of INGAA participated), and in FERC technical conferences and filings.

INGAA’s portentious characterizations of my testimony and conclusions regarding pipeline utilization during the polar vortex are demonstrably incorrect. While some might disagree with my perspectives regarding whether and what caused certain pipelines to underperform, it is a fact that pipeline capacity, as measured against firm contracted capabilities into studied areas in the northeast, was not fully utilized during the polar vortex event of January 2014.

My responses to Questions for the Record from Chairman Murkowski and Ranking Member Cantwell address the validity of additional assertions in INGAA’s letter, and I refer the committee to those responses, which are likewise premised on facts and detailed analysis including by credible jurisdictional regulatory agencies regarding the costs and benefits of new pipeline capacity.
Thank you again to the members of the committee for the opportunity to appear and testify on important policy questions regarding natural gas pipeline infrastructure.

Respectfully submitted

[Signature]

N. Jonathan Peress

(617) 406-1838
njperess@edf.org
Statement on behalf of John P. Stupp, Jr., Chief Executive Officer of Stupp Corporation.

Submitted for the Record for a Hearing held on June 14th, 2016 by the Senate Energy and Natural Resources Committee, titled “Hearing to examine oil and gas pipeline infrastructure and the economic, safety, environmental, permitting, construction and maintenance considerations associated with that infrastructure”.

Thank you to the Members of the Committee for allowing me the opportunity to add my comments to this important discussion. I speak to you today on behalf of Stupp Bros. Inc (SBI) to provide a U.S. steel line pipe manufacturer’s perspective on the current global steel crisis and its impact on the U.S. steel line pipe industry and market. Steel line pipe manufacturers like SBI have been negatively impacted in recent years – not only because of declining oil and gas infrastructure investment, but primarily due to overcapacity, dumping, as well as outdated and cumbersome trade laws. In submitting these comments, SBI hopes to raise the attention of the U.S. government to these issues and looks forward to working with the government to protect our industry and restore a common-sense balance to the global steel market.

SBI is a sixth generation, family owned and operated steel fabrication business with significant operations in St. Louis, Missouri, Bowling Green, Kentucky, and Baton Rouge, Louisiana. SBI has also made significant investments in steel research, pipe traceability, cathodic protection coatings, overseas and domestic construction, and next generation welding technologies. SBI projects have raised stadiums and skyscrapers across the Midwest, safely ferried multiple millions of barrels of domestic crude oil and trillions of cubic feet of natural gas, and supported millions of cars, trucks, and trains safely over steel bridges. All told, in 2015 SBI employed 1,100 Americans in our various business components.

Unfortunately, the SBI steel pipe manufacturing business and sister coating company – Stupp Corporation and Stupp Coatings, respectively – located in Baton Rouge, Louisiana, have faced catastrophic hardship this year and in Q4 2015, resulting in more than 500 layoffs. This has left less than 30% of the original workforce. The challenges SBI faces have not only come from the decline in the domestic oil and gas business overall but largely from a surge in cheaply priced foreign steel pipe imports and aggressive and illegal trade law enforcement in Mexico.

As has been well documented, over the past two years the U.S. domestic steel industry has suffered an unprecedented surge in dumped and heavily subsidized Chinese steel. Estimates are that China has approximately 400 million metric tons of overcapacity. That surplus has flooded the U.S. with excess raw material at below-market prices and caused irreparable damage to US steel mills and US producers of finished good steel products. The International Trade Commission, through the Department of Commerce, has put more duties on Chinese and Korean inbound steel in reaction to this epidemic. However, protection for the domestic steel industry without protecting steel products – like pipe – actually hurts pipe producers and hurts the steel producers. This is because steel producers’ hot-rolled coil buying customers (pipe and tube producers) cannot compete with pipe and tube imports which have low or no duties.
Background on China’s Steel Industry and Role in the Global Steel Crisis

As previously mentioned, the main driver of the global steel crisis is China, which joined the World Trade Organization in 2001. From 2000 to 2005, China’s steel production nearly tripled. The Government of China then enacted a plan which called for direct support for the industry through tax policy, interest subsidies, and scientific research funds. The plan also provided instructions for reorganizing existing steel producers into more efficient, larger companies. The plan worked, and by 2009 China was making almost half of all the steel in the world. Not satisfied, the Chinese government enacted two more policies in 2009 and 2011 to boost their domestic steel production. By 2013, Chinese steel production peaked. Small decreases followed in 2014 and 2015 but, because production in market-driven economies fell faster, China’s share of world production nonetheless increased.

Pipe and tube manufacturers feel the pain of Chinese steel’s irresponsible growth over the past decade just as deeply as flat-rolled steel manufacturers. Although direct Chinese imports of steel pipe and tube have fallen, low-priced Chinese flat-rolled steel has made its way into pipe and tube products made in other countries, most notably in Korea. Subsidized Chinese steel is fabricated in Korea into an array of extremely low priced pipe and tube products that are then exported to the United States. Chinese flat-rolled steel exports to Korea grew much faster from 2011-2014 than to the rest of the world. Subsidized steel from China fueled an almost doubling of pipe and tube exports from Korea to the U.S. as a result. It is worthy to note that Korea has no home market for steel line pipe or oil country tubular goods.

The consequences of the current import trends are stark. Over the last year, steel pipe and tube companies have had to lay off more than four thousand workers, with Texas, Pennsylvania, Arkansas, and Louisiana suffering some of the greatest hardships. In addition, major producers like Allied Tube & Conduit have exited certain segments of the business, resulting in plant closures and additional layoffs. Another major pipe producer, Boomerang, sought bankruptcy protection. This year, U.S. Steel announced that it would idle tubular production facilities in Texas and Alabama, laying off nearly 800 workers in these already hard-hit communities. In the latest slew of bad news, Tenaris announced on June 21, 2016 that it is permanently closing its Hickman mill in Arkansas, which produces welded steel pipe.

It should be apparent from such closures and bankruptcies that the U.S. pipe and tube industry is facing a serious crisis. Although import volumes fell in 2015, domestic shipments fell at an even faster rate. Imports managed to capture 60 percent of the domestic pipe and tube market in 2015. This is particularly bad news for the domestic industry, because every sale in a declining market is vital.

Equally distressing is the explosive importation of finished tubular pipe from South Korea, Turkey, Greece, and others capable of buying severely depressed Chinese raw steel and converting it to finished product. Imports now account for more than 50% of the U.S. line-pipe market with Korean line pipe selling in the U.S. market at prices often at half of Stupp Corporation’s average selling price. On October 6, 2015, the Department of Commerce determined dumping of Welded Line Pipe from Korea and Turkey (in addition to subsidies by Turkey) and assessed anti-dumping duties against these offenders; however, in the case of South Korea, in our assessment, these duties were ineffectual, ranging from 2.53% to 6.19%, and represent a setback in the ability to adjudicate a proper case for welded line pipe dumping.

Following the AD and Turkey CVD determinations, Korean steel pipe sales prices are routinely sold below Stupp Corporation’s domestically supplied raw material prices. These prices are concurrent with a significantly bleak midstream line pipe market outlook. Demand for various pipe diameters have dropped off over 50% compared to a year ago with only 3.5 million tons of line pipe shipments projected in 2016.
The result is that while the U.S. pipe manufacturing industry has experienced consolidation and closures consistent with oil and gas industry reductions, those few projects left for competition face unprecedented and insurmountable low-price foreign imports.

Canada and Mexico’s impact on U.S. Steel

Finally, it’s worth noting that macroeconomic conditions in North America present further challenges with regards to Stupp Corporation’s relative position concerning imports and exports. With regards to Canada, the current exchange rate discourages foreign export of U.S. pipe to our northern neighbor and encourages importation of Canadian line pipe into the U.S. With regards to Mexico, Mexican line pipe producers have been successful in their efforts to artificially erect trade barriers – utilizing a carve-out in NAFTA for energy products - severely inhibiting the ability of U.S. line-pipe manufacturers to export to Mexico. Many of the Mexican projects from which U.S. Pipe producers now find themselves excluded are actually transmitting U.S. natural gas across the border, making this situation especially disappointing from an American industry perspective.

Recommendations

With this in mind, Stupp Bros. Inc. encourages the following:

• Congress should take whatever legal, enforcement, and policy recourse is necessary – including issuance of comprehensive “safeguard measures,” per Section 201 of the Trade Act of 1974 – to stop the aggressive dumping of both raw steel and foreign finished product;

• Congress should use any available forum to convince Commerce and this Administration to reject efforts by China to reclassify its economy away from a non-market economy before the WTO and demand China cease unfair currency devaluation practices;

• Congress should insist Commerce provide routine and uniform data collection on imported steel pipe products and as necessary issue timely assessments and responses to market distortions, illegal subsidies, and other trade manipulations that harm U.S. steel manufacturers and fabricators;

• Congress should immediately condemn the unsubstantiated, protectionist measures asserted by the Mexican government to keep U.S. welded line pipe out of projects that move U.S. natural gas or to establish unfair and unfounded duties;

• Finally, Congress should ask that Commerce fully implement portions of P.L. 114-125, Trade Facilitation and Trade Enforcement Act internally and with federal partners, to create additional protections for domestic steel manufacturing.

On behalf of everyone here at Stupp Bros. Inc, I thank you for taking these points into consideration and for the Committee’s interest in the health of the pipe industry. SBI stands ready to assist you in helping remedy the dire conditions pipe and tube manufacturer face.

Stupp Corporation
12555 Ronaldson Road
Baton Rouge, LA 70807
http://www.stuppcorp.com (225) 775-8800
Statement of The Williams Companies, Inc.
Submitted June 23, 2016 to the Senate Energy and Natural Resources Committee
for inclusion in the Record of the June 14, 2016 Hearing on Infrastructure

Chairman Murkowski, Ranking Member Cantwell and members of the Committee. On behalf of The Williams Companies, we appreciate the opportunity to submit this statement for inclusion in the record of the above referenced hearing.

The Williams Companies is primarily a natural gas infrastructure company that owns and operates natural gathering, processing and pipeline transportation facilities. As much as 30% of the natural gas consumed in the United States on a daily basis touches a Williams facility. In the last three years we have spent nearly $1 billion building and maintaining natural gas infrastructure throughout the country, but primarily in the eastern portion of the United States. A more detailed description of our activities can be found on our website, www.williams.com. These comments will focus on our experience in permitting FERC-jurisdictional facilities in recent years, specifically the Constitution Pipeline project.

The Natural Gas Act, passed in 1938 and since amended, established the principal that the Federal government would oversee the certification and regulation of interstate natural gas pipeline facilities and this regulatory structure has resulted in the United States having the most advanced natural gas pipeline network in the world. The 2005 Amendments expressly provided for the Federal Energy Regulatory Commission to quarterback and oversee the economic and environmental reviews associated with interstate projects in order to avoid a scenario where multiple approvals by multiple governmental entities would lead to a “death by a thousand cuts” process that effectively undermined the ability of entities to obtain approval for these multi-billion dollar projects.

However, in recent years, we have seen the regulatory review process for interstate natural gas pipeline projects become more contentious as opponents of natural gas have become more organized, better funded and sophisticated in their efforts to thwart new infrastructure. While the traditional regulatory process is premised on the approach that if there’s documented demand for the gas, and the facilities being proposed can be constructed and operated in an environmentally sound manner and along an acceptable route, then the facilities should be built. On the other hand, opponents of the industry increasingly are determined to create as many obstacles as possible in order to stop fossil fuel use, including efforts to thwart the approvals necessary for new transportation facilities to be built. For these groups, the regulatory process is not about ensuring the processes work as intended, rather it’s about opposing all projects. For example, the group 350.org says on its website that one of its goals is to “Fight iconic battles against fossil fuel infrastructure”. In other words these groups are not interested in using the regulatory process in the way it was intended, but rather to use it to advance their own agendas even though such agendas are contrary to the policy goals adopted by Congress.
Therefore, we were happy to see the Committee focus on this issue in its June 14th hearing, because this issue has important implications for our country and its economy. We hope this effort will result in reforms that will end the abuse of a permitting process that has served this country well.

To provide some detail around our recent experience, Williams is the lead among several companies attempting to permit and build the Constitution Pipeline, a natural gas pipeline that would connect New York and New England markets with gas supplies from the Marcellus Shale in Northeast Pennsylvania. We began the regulatory process at FERC in April, 2012 and the FERC issued its Certificate of Public Convenience and Necessity approving the Constitution Pipeline on Dec. 2, 2014. In its final environmental review of the proposed pipeline, FERC concluded that environmental impacts would be reduced to “less than significant levels” with the implementation of proposed mitigation measures by the company and recommendations by FERC.

New York State and its Department of Environmental Conservation (NYSDEC) actively and fully participated in the FERC regulatory process commenting on the Constitution Project, its proposed routing, alternative routes preferred by New York, the environmental impacts of the Project, among many other things. Indeed, NYSDEC submitted nine separate comment letters to FERC raising its concerns as part of the Environmental Impact Statement Process.

New York did not appeal FERC’s approval but instead proceeded to engage in an improper collateral attack on the FERC decision by abusing its discretion and misusing the Clean Water Act 401 Water Quality Certification process as a basis to stop the project from moving forward. NYSDEC denied the 401 Water Quality Certificate, which is necessary before the Corps of Engineers can issue our permit pursuant to Sec. 404 of that Act. Obtaining this certification, which essentially tells the Corps that the state agency has reviewed the project for potential impacts to the state’s water quality program, is normally a routine process. It is supposed to be a science-based decision, not an opportunity for the state to veto an interstate project on political grounds.

Here, however, NYSDEC, at the direction of the Governor’s Office, issued a political decision denying the 401 Water Quality Certificate. The actual denial, which can be found at http://www.dec.ny.gov/press/105941.html, does not find that building the pipeline would harm New York’s water quality, but suggests that the project sponsors did not provide the information the state needed to reach a fact based decision. The decision was issued on April 22, Earth Day.

We believe NYSDEC’s stated rationale for the denial includes a series of misstatements and inaccurate allegations, and appears to be driven by New York State politics rather than environmental science.

Constitution Pipeline worked closely with NYSDEC staff for more than three years to ensure that water quality measures are met before, during and after construction. As a result of that
dialogue, Constitution Pipeline voluntarily agreed to the agency’s requests to incorporate re-routes, adopt trenchless construction methodologies, commit to site-specific trout stream restoration and agreed to fund approximately $18 million for wetland mitigation and banking and approximately $8.6 million for the restoration and preservation of migratory bird habitats.

We worked in good faith with the NYSDEC for years, so this decision comes as a surprise and is contrary to our dialogue and collaborative effort to address concerns. The FERC-certificated route was developed after extensive environmental and engineering analysis, which included a comprehensive review of route alternatives. In its Final Environmental Impact Statement, the FERC concluded that environmental impacts associated with the alternatives were greater than the preferred route. Despite this, in the spirit of collaboration, we followed NYSDEC guidance and further altered our preferred route to adopt some of the NYSDEC staff recommendations.

We were informed by the NYSDEC that the agency had everything it needed to process the water quality certification. This point was further emphasized when the agency issued a notice indicating that the application was indeed administratively complete.

Contrary to NYSDEC statements, the company was not informed of any outstanding issues that it had not agreed to address as a condition of the permit. In fact, during the past nine months, weekly inquiries were made to the department to ensure no additional data was needed. Those inquiries were either ignored or responded to in the negative. It is obvious that the NYSDEC deliberately chose to remain silent to bolster the political campaign of the State.

The company also takes serious issue with claims that its application lacked information related to stream crossings, depth of pipe, or blasting.

Completely contrary to NYSDEC’s assertion, we provided detailed drawings and profiles for every stream crossing in New York, including showing depth of pipe. In fact, all stream crossings were vetted with the NYSDEC throughout the review process. We are appalled with the comments that Constitution failed to provide sufficient data to ensure every crossing was totally in compliance with the NYSDEC guidelines.

Constitution Pipeline did not refuse to provide a comprehensive analysis of pipe depth. Constitution committed to bury the pipe at least five feet or deeper below the lowest bed elevation of the stream bed in unconsolidated bedrock, which exceeds the federal regulations for pipe depth. After weekly meetings and site visits with NYSDEC, the company also committed to conduct geo-technical borings and develop a feasibility report which would be provided to the NYSDEC after the permit was issued for specific stream crossings which were identified by NYSDEC.

The project sponsors will pursue all available options to challenge the legality and appropriateness of New York’s decision particularly since it is based primarily on (a) comments previously made by New York to FERC which FERC carefully considered before issuing its Certificate of Public Convenience and Necessity for the Project; and (b) factually inaccurate
assumptions and assertions.

Denial of the 401 Water Quality Certification by NYSDEC further delays the potential for Constitution Pipeline to help facilitate local natural gas service to homes and businesses in Southern New York, including the installation of delivery taps along Constitution’s proposed route to facilitate local natural gas service by Leatherstocking Gas Company, LLC to homes and businesses in southern New York and northern Pennsylvania.

The permit denial will also delay about 2,400 direct and indirect jobs that would be created during pipeline construction, generating $130 million in labor income for the region. The decision could also cost local governments approximately $13 million in annual property tax revenue.

The 2015 New York State Energy Plan specifically recognized the role of the Constitution Pipeline, projecting that natural gas usage will increase during the next 15 years, and by 2030, natural gas will provide the largest share of any single fuel source. Much of this additional natural gas will be used to help generate electricity while also enabling the state’s adoption of more renewable energy sources.

The Committee needs to understand that if allowed to stand, New York’s actions will effectively overturn nearly 80 years of Federal law, which gives the permitting responsibility for interstate natural gas pipeline facilities to the Federal Energy Regulatory Commission as well as thwarts the free movement of natural gas in interstate commerce. We urge the Committee to reassert the primacy of the Federal government in this area to maintain the integrity of the permitting and certification process.

Any questions regarding this statement may be directed to Judy Neason, Williams’ Federal Government Affairs Director.

**Constitution Pipeline Company**

Constitution Pipeline Company, LLC is owned by subsidiaries of Williams Partners L.P. (NYSE:WPZ), Cabot Oil & Gas Corporation (NYSE:COG), Piedmont Natural Gas Company, Inc. (NYSE-PNY), and WGL Holdings, Inc. (NYSE:WGL). The 125-mile pipeline project is proposed to connect domestic natural gas production in northeastern Pennsylvania with northeastern markets during the second half of 2018. Additional information about the Constitution Pipeline can be found at [www.constitutionpipeline.com](http://www.constitutionpipeline.com).