

**Summary of Presentations and Comments
At the
*Quadrennial Energy Review***

**Stakeholder Meeting #6: Pittsburgh, PA
Natural Gas: Transmission, Storage and Distribution
July 21, 2014**

Opening Remarks



Courtesy of Carnegie Mellon University

Jim Garrett, Dean of the College of Engineering, Carnegie-Mellon University

Main Points:

1. Welcome to Carnegie Mellon University and today's Quadrennial Energy Review (QER) public meeting. The Scott Institute for Energy Information (Scott Institute) is happy to have the U.S. Department of Energy (DOE) hold its meeting here in Pittsburgh at our facilities.
2. The Scott Institute is focused on bringing to bear cutting edge research in the sciences, engineering and public policy to advance practical solutions to real world problems. We stand here today, just a few yards down from where the National Energy Technology Laboratory was born.
3. I am honored to introduce Melanie Kenderdine, Director of the Office of Energy Policy and Systems Analysis (EPSA) and Energy Counselor to the Secretary of Energy.

**Melanie Kenderdine, Director of the Office of Energy Policy and Systems
Analysis (EPSA), U.S. Department of Energy**

Main Points:

1. Thank you to Carnegie-Mellon University for hosting DOE today. The EPSA office is leading the analysis and outreach efforts for the White House led Quadrennial Energy Review. I would like to extend a special thank you to Dr. Karen Wayland and all of her staff from EPSA that put together today's meeting.
2. It is with great honor that I introduce Congressman Tim Murphy (R-PA) and Secretary of Energy Ernest Moniz who will talk a little more about the Quadrennial Energy Review.

**Honorable Tim Murphy (R-PA), U.S. House of Representatives, Representing
the 18th District of Pennsylvania**

Main Points:

1. Pittsburgh is one of the major energy hubs in America. We have an abundance of coal and natural gas and are close in proximity to the birthplace of the nuclear and oil industries. The shale revolution that we are in the beginning of continues to have a global impact and I would like to discuss where this is leading us and some of the major regional challenges that we now face.
2. During the polar vortex of the past winter, the price to deliver natural gas to New York City during January spiked to \$120 per million British thermal units (BTUs) in the spot market, about 30 times higher than the equivalent natural gas spot price a hundred miles away in the Marcellus shale region.
 - a. This was not an issue of speculation, rather it was a capacity issue based upon production and pipelines delivering the natural gas to market.
 - b. The New England Governors came together and requested a pipeline big enough to deliver a maximum of 600 million cubic feet of natural gas per day, which would add 10% to their capacity, and while the success of the project is critically important for the region, there have been issues in getting the job done. (see <http://www.nescoe.com/uploads/NewEngGovEng12-05-13.pdf>).
 - c. Pipeline permitting delays of more than 90 days have risen 28% since 2005. H.R. 1900, the Natural Gas Pipeline Permitting Reform Act, passed by the U.S. House of Representatives on November 21, 2013, is designed to eliminate those barriers. I now hope that the U.S. Senate moves forward on this bill, because we need it.
3. The major uses for natural gas lie in exports, manufacturing, thermal energy and electricity and energy production and transportation. Gas is less than \$4 per unit in the U.S., but is over \$10 in Europe, over \$15 in Japan and China and is \$13.75 in India.
 - a. A major benefit in exporting natural gas would be to reduce the influence Russia holds over the European continent as the main supplier of fuel (natural gas) for energy production and manufacturing facilities. Russian President Putin and Gazprom would feel the impact of a fleet of liquid natural gas (LNG)

- ships from the U.S. was headed to Eastern Europe, the Balkan states or in the seas surrounding the region.
- b. While exporting natural gas certainly has positive benefits, we must be careful not to significantly increase or decrease the spot price, as a large decrease would cause a reduction in production (supply) and a large increase would cause a reduction in demand.
4. An increase in domestic demand for natural gas will lead to an increase in demand for locally-made oil and piping tube (Steel production in the U.S. energy markets accounts for about 10% of domestic steel production, nearly 8,000 jobs in 22 states).
 - a. However, the steel industry faces dumping issues from importers, namely China, Korea, Turkey and India as well as others. The U.S. Department of Commerce recently reversed its original decision and noted that there is a dumping issue which will hopefully lead to tariffs being placed on imports of oil country tubular goods (OCTG) pipes from these countries to ensure fair trade.
 5. Lastly, we need to recognize that in the thermal area, natural gas cannot replace nuclear power and cannot replace coal-fired generation. We continue to move forward on the development of clean coal technology, and appreciate the continued support from the National Renewable Energy Laboratory (NREL) and DOE. It is this partnership, working together on all of the areas of energy, which the Pittsburgh region depends on.

Honorable Ernest Moniz, Secretary, U.S. Department of Energy

Main Points:

1. Pittsburgh is certainly one of the major energy hubs in America. It is playing a major role in the shale and wet shale gas revolutions as well as nuclear power. On the demand side, Pittsburgh is a member of the DOE-sponsored Better Buildings Challenge, and is working to get 20% better efficiency out of city buildings by 2020.
2. The Quadrennial Energy Review was introduced in President Obama's Climate Action Plan last June. The goal of the QER is to put together a policy development process that brings together all of the important energy entities across the government.
 - a. The review is co-chaired by the White House Council of Environmental Quality and the Office of Sciences and Technology Policy, with DOE serving as the Executive Secretariat, providing the capacity for deep analysis to move the process forward.
 - b. This first year of the QER, we are focused exclusively on energy infrastructure, the transmission, storage and distribution of energy.
3. Congressman Murphy addressed the polar vortex, where we saw tremendous increase in natural gas prices in New York and New England, largely due to a lack of energy infrastructure.
 - a. We are seeing significant increases in production from the region that needs a similar increase in infrastructure development. We now need to find a way to allow the fuel to flow from the source to the market.

- b. We are also seeing increases in natural gas liquids production (propane, butane, ethane, etc.).
 - c. These products are tremendously important to the economic equation, as a feedstock to industry in addition to heating many parts of our country.
- 4. The natural gas revolution will help push us towards lowering our carbon emissions. The U.S. is roughly halfway to the 17% reduction called for by 2020, about half of that has been accomplished because of natural gas.
 - a. Having said this, we know that production must be environmentally responsible, and here we have challenges, but they are manageable. The challenge is to manage them, and manage them all at the same time.
 - b. We have been working on better management of flow back water to the surface and dealing with methane emissions, but must continue to press and we can and will do better.
- 5. To update our energy infrastructure we will need to provide training opportunities to bolster and in some sectors replace an aging workforce.
 - a. The President often uses the phrase “ladders of opportunity to the middle class;” the energy industry is a premier provider of such ladders and will continue to be for some time to come.

Audience Questions and Answers

Q: (Patricia Demarco) If Marcellus shale is being used as a bridge fuel, what is the other pillar that are being taken to transition to a renewable future?

Secretary Moniz

- We are doing a lot to advance renewable technologies and to lower their costs.
 - For example, DOE has a program that has provided guarantees for the first five utility scale photovoltaic plants in the country. They are all doing fine, and there are 10 additional facilities that are now being fully supported through private sector investments.
 - And while the Climate Action Plan has us pursuing what we can do administratively, we are still hoping that we will be able to work with Congress in terms of some statutory changes.
- On the electricity side, there are many proposals to build major transmission lines to connect major renewables at some distance to market.
- Today we are here to talk about infrastructure issues surrounding natural gas; however other meetings being held will discuss some of the electricity infrastructure issues.

Congressman Murphy

- I believe in an “all-of-the-above” energy policy which includes ways of improving clean coal technology as part of that.

- I believe we still have to invest a great deal into research to advance more efficient ways of solar production, making those technologies more cost efficient, as well as wind power and other renewable resources.
- We also must realize that as we shut down coal plants we are putting households in a tough situation, one where they are fighting against poverty, rather than climate change and we need to find a solution that can fight climate change, while protecting the livelihoods of all Americans.

Secretary Moniz

- I would like to emphasize that in discussing the “all-of-the-above” approach, and looking toward a future of low carbon solutions, the expectation certainly is that these solutions will look differently in different parts of the country and certainly in different countries throughout the world.
- We are committed to advancing technology and advancing the cost direction across the full spectrum of fuels and on the demand side of the equation as well. As we drive towards lower carbon, there will be tremendous needs for infrastructure development and that will lead to a real jobs that we will need to prepare our citizens to take on.

Ms. Kenderdine

- I would like to also note that we are focusing this year on transmission based issues as we view these issues as a limiting factor for both modernizing our energy system and moving toward a low carbon future. In year two, we will focus on generation and end use infrastructure and will get much more into renewable generation, efficiency end use, and distributed generation.

Q: (Paul Clemsick) Looking at the price discrepancy between oil and natural gas, do you believe that money is going to the wrong industries for the wrong reasons?

Congressman Murphy

- One of the reasons for this discrepancy is due to the fact that there is no open marketplace (for oil) as there are huge restrictions on supply. I do believe that we should reduce our dependency on Organization of the Petroleum Exporting Countries (OPEC) imports.
- To do this we will need American oil, natural gas, coal, nuclear, wind and solar power. We will achieve this through an open marketplace with the government watching to make sure that people are playing fair in this “space.”

Secretary Moniz

- We certainly cannot discuss the government controlling the marketplace. I cannot agree with that concept.

Q: (Dick Bujura) Do you see a role for coal-fired generation as you look toward future energy developments in the Quadrennial Energy Review?

Secretary Moniz

- I have an interesting fact that I think can highlight a point that I made earlier. Solar power is 0.2% of the national energy production, but in May the California Independent System Operator (CAISO) reached 6%. This reinforces the point that low carbon solutions will be different in different regions.
- We are going to see different fuel mixes in different regions. In terms of coal-fired generation, we are continuing to make very major investments in trying to advance coal with carbon capture utilization and sequestration. Inherent in the “all of the above” solution is the idea that fossil fuels can and will be part of low carbon solutions.

Congressman Murphy

- I can add that one of the most important things that we can do that does not involve any energy production is energy reduction and conservation. Reducing the amount of energy and money that is wasted will be one of the prime things we can move forward and is an area that we will continue to develop.

Secretary Moniz

The real challenge in terms of the grid is that we do not yet have the grid of the future. That future grid will allow, for example, the integration of renewables over long distances, the integration of more distributed generation, the integration of more intelligent technologies and systems to provide more consumer services.

Panel I: Natural Gas Infrastructure: Historical Overview and Current Status



NOTE: All speaker presentations are posted on the QER webpage at: www.energy.gov/qer

Presenter: Thomas Murphy

Affiliation: Co-Director of Pennsylvania State Marcellus Center for Outreach and Research

Main Points:

1. From a domestic perspective, the shale revolution offers the U.S energy security. From an international perspective, it has the potential to shift the geopolitical landscape in Europe.
2. The increase in shale gas production will lower carbon dioxide emissions; however we must research methane emissions and ensure that upgrades are made from the wellhead to the end user to limit methane emissions.
3. The exportation of natural gas can assist in balancing the trade deficit and will lead to value-added benefits in production locations.
4. We need infrastructure development to accompany the increase in natural gas wells. At this point there are some wells that are not yet connected to pipelines.
5. We must educate the public on the issues and solutions so that they can become more informed and can actively participate in the discussion.

Presenter: Peter Terranova

Affiliation: Vice President, Midstream Assets and Services, UGI Energy Services

Main Points:

1. During the polar vortex this past winter we saw a situation where producers in Pennsylvania were receiving prices well below the market price (New York Mercantile Exchange (NYMEX)) for natural gas while prices being paid in the market by end users were significantly higher than the NYMEX. This creates a situation where natural gas that could be utilized by the end user was being “trapped” in Pennsylvania.
2. In Northeast Pennsylvania, a Procter and Gamble plant was set to shut down. It was hooked up to a natural gas pipeline from the Marcellus region and is now running double in size. Natural gas is being delivered even further down that pipeline to end users in the Scranton-Wilkes Barre region.
3. We see similar wedges in prices in the Mid-Atlantic region and propose that a pipeline (120-130 miles) that can get gas from the areas of production in Pennsylvania to those end users who are demanding the natural gas.
4. Shale gas has benefited end users through significant savings in their electric and heating bills. There is still much work left to be done, and the end goal should be to take advantage of this locally produced resource.

Presenter: Josh Nordquist

Affiliation: Director of Business Development, Ormat Technologies

Main Points:

1. Recovered energy generation (REG) is a waste recovery technology that allows pipeline compressor stations to generate fuel-free electricity from local grids, and is a tremendous opportunity for the natural gas sector.
2. REG collects exhaust from compressor stations (typically about 900 degrees Fahrenheit) and brings it to a power plant where it is used to drive a turbine and electrical generator.
3. REG is now applied to 19 compressor stations throughout North America. Each unit can generate 4.5 to 6.5 megawatts (MW) of power. The electricity generated is supplied to local grids through power purchase agreements. A typical REG plan includes an agreement between the REG operator and the pipeline owner, in which the pipeline owner receives a royalty for the waste heat that they provide (the waste heat has no value without REG).
4. REG does not sacrifice compressor station operation or safety. It requires no fuel to operate. REG is available 99% of the time, in any environment (currently operating in North Dakota and Nevada). The units provide dispatchable power, which is available on demand or in auto mode. It is closed loop, emissions free and air-cooled. It requires no water for operation and has low maintenance costs in relation to similar sized power generation facilities. Today, Ormat operates many of these REG facilities remotely.
5. Each new compressor station built has the potential to develop clean, fuel free electricity and can compound the economic and environmental value of the infrastructure investment through the use of REG.

Presenter: Piotr Galitzine

Affiliation: Chairman, TMK IPSCO

Main Points:

1. TMK believes that there are two pipeline corridors developing in the U.S.
 - a. Primarily Gas Corridor: From Marcellus to the Gulf.
 - b. Primarily Oil Corridor: From North Dakota (Bakken) to the Mid-Continent oil province and Eagle Ford formation.
2. TMK believes that the push to export LNG will benefit the U.S. There are now 7 export projects that when completed will be able to export just under 11 billion cubic feet (bcf) per day.
3. 55% of oil and natural gas infrastructure is over 45 years old. There are significant infrastructure needs that must be completed before the full export potential can be reached.
4. Natural gas will be used domestically for electrical production, transportation and as the principle fuel source for industrial production. As an energy feedstock, natural gas will create the renaissance of American manufacturing and industry, driven by the shale gas production.

Presenter: Thomas Minney

Affiliation: Director, Central Appalachians Program, the Nature Conservancy

Main Points:

1. The Central Appalachians are a global center for forest and fresh water diversity. They provide tangible benefits linked to people's well-being in both Pittsburgh and Washington, by way of providing clean drinking water and recreation.
2. The overlap between nature and energy supplies in this region is the most formidable challenge in contemporary society. However, we can work together to meet the energy needs while ensuring that the water and lands continue to provide a benefit to nature and people.
3. If the current rate of shale development continues, up to 11 million acres of land can be impacted. The development can lead to a 22% decline in the "best condition" watershed lands and up to one million acres of forest habitat is at the risk of development, much of the overlap in important natural areas.
4. We can work together with industry, government and others to find solutions to reduce risks, and avoid or mitigate these impacts through sound science. Using the science and tools that we have put together, we can look out at future projections and reduce the impact they have on the land.
5. The Nature Conservancy advocates for the expansion of voluntary mitigation frameworks as well as state and federal frameworks to avoid or minimize impacts. We are working on a low impact shale infrastructure planning tool, which will help us work with industry to find the least impactful and financially sound shale development alternatives.
6. The Nature Conservancy is developing recommended conservation practices that will be released in the fall of 2014. The practices designed to reduce the impacts of shale development include:
 - a. Landscape planning practices
 - b. Habitat buffer planning practices
 - c. Stream crossing practices
 - d. Road and pipeline construction practices
 - e. Noise reduction practices

Presenter: Hayley Book

Affiliation: Director of Policy, Pennsylvania Department of Environmental Protection

Main Points:

1. Advancements in technology created the modern natural gas industry in Pennsylvania.
2. Governor Corbett's state energy plan "Energy Equals Jobs" reflects not only the significant natural gas resources being tapped, but also the full energy portfolio of Pennsylvania (oil, natural gas, coal, nuclear, hydropower, wind and other renewables).

3. There are currently 7,000 unconventional wells in Pennsylvania. 30% of these wells are not in production because they are waiting for remaining infrastructure to be put into place to take the gas to market.
4. One of the most dynamic activities in Pennsylvania will be the establishment of gathering lines to connection wells to larger pipelines. State laws and implemented regulations will ensure that all pipelines are built safely. To help facilitate the pipeline permitting process, we increased the permitting office staff from 88 employees in 2008 to 200 employees today.
5. Pennsylvania can harness the energy sector to create jobs, raise standards of living, foster a business climate that rewards innovation, advance the nation's energy independence and importantly, enhance our environment. However, this will not be possible without a strong and reliable infrastructure.

Panel Questions and Answers

Q: Is there a federal role in helping to improve upon the infrastructure constraints you laid out in your statements?

Thomas Murphy

- The federal government can develop an educational process to show what “all-of-the-above” would include, in terms of the need for infrastructure. If you look at demand to put new pipe in the ground, some of it is being stopped by landowners who have access for right-of-ways. If these landowners can be educated on the need for the infrastructure, the federal government can do a lot to help alleviate constraints.

Peter Terranova

- I agree with Mr. Murphy that a comprehensive education effort for consumers is needed, to help them understand how important the infrastructure development is to the industry and the nation. Substituting natural gas for oil has both economic and environmental benefits for the customer. Making them aware of these benefits would be beneficial for all.

Josh Nordquist

- I think the federal government can provide support to incentivize projects to strongly consider the benefits of waste heat recovery. Waste recovery does not get many of the incentives that other alternative energy production gets and the benefits that this technology provides are not valued as highly as they should be.

Piotr Galitzine

- A good example of what not to do would be the Keystone XL project. As a result of that project's failure, Canada decided to send that oil to the West and to Asian markets. This decision by Canada is a real problem for the 37 refineries on the Mexican Gulf Coast,

because they run on heavy oil and because you cannot flip a refinery from one type of oil to another.

- On the issue of fracked water regulation, 28 states have already implemented requirements to reveal what is in the fracked water. These regulations make sense as we all want to know what is in the fracked water, particularly if the drilling is anywhere near drinking water.
- If there are federal regulations coming by the Environmental Protection Agency (EPA), they should come quicker because there is currently a lot of uncertainty among the major players as to what regulations are forthcoming.

Thomas Minney

- The federal government should look how pipelines and transmission lines are going to be placed on the land and work to reduce impacts to critical habitats.

Hayley Book

- The federal government should remain involved in the permitting process with regard to reducing impacts on the surface and impacts to threatened and endangered species and species of special concern.

Q: Are there other technologies that the federal government should take into account in the future as it relates to addressing infrastructure constraints?

Piotr Galitzine

- The federal government can make efforts to tap the nation's geothermal resources. In California, all the energy generation north of San Francisco comes from geothermal resources, and there are a lot of other areas that have similar potential.

Thomas Murphy

- Federal government funding for additional research to solve some of the issues posed by methane emissions would be well placed.

Peter Terranova

- I would like to see funding placed into end use technologies that would lead to greater efficiencies. The technologies that need to be made to make natural gas a motor fuel and provide accessibility to large fleets has a lot of potential to reduce this nation's dependence on oil.

Q: Are you seeing any complications between regulations at the federal, state or local levels? And if so, what actions would you recommend?

Hayley Book

- Most regulations are at the state level. There is some role for the federal government, mainly through the Army Corps of Engineers, in terms of permitting for erosion and sedimentation control for the development of pipelines.
- In Pennsylvania, we provide a State Programmatic General Permit, which is a joint federal and state permit. We are currently working with the Army Corps of Engineers on streamlining the process for applying for these permits, while making sure that the process is equally protective of the environment.

Thomas Murphy

- A federal program in place to increase the credibility of fuel-based inspectors would be a real asset. It would also increase the credibility of the programs out in the field.

Q: If you had one final comment or suggestion to the QER Task Force, what would it be?

Thomas Murphy

- I feel very passionately that an educational program that would help citizens see the big picture, the national or global picture, of what types of investment is needed for the future of the planet is necessary.

Peter Terranova

- The DOE is uniquely positioned within the government to bring some rationality and fact-based discussion to the whole issue of energy, energy use and energy development.

Josh Nordquist

- The DOE can help make sure the industry is using all its resources effectively as they will all be needed in the future, whether or not they are used here or used abroad.

Piotr Galitzine

- The U.S. should revisit the 1975 law that forbid the export of oil and open up its markets.

Thomas Minney

- The DOE should ensure that there is a focus on landscape fragmentation and that habitat impacts be included in the dialogue.
- In addition DOE can ensure that the industry is proactive about the planning and tools used to ameliorate, avoid and mitigate those impacts.

Hayley Book

- My one request would be to continue the public discussion and make sure that as a national energy policy is formed, that the decision makers are well informed and that they have received all of the necessary stakeholder input.
- DOE should look to the states and individual needs and resources as they move forward with their plan.

Panel II: How Prudent Infrastructure Investment Can Help Maximize Resource Potential



NOTE: All speaker presentations are posted on the QER webpage at: www.energy.gov/qer

Presenter: Shelly Corman

Affiliation: Interstate Pipelines, Energy Transfer Partners

Main Points:

1. The changing patterns of oil and natural gas production have posed interesting challenges for Interstate Pipelines.
2. Producers suffer when they cannot get natural gas to the market due to lack of necessary infrastructure.
3. Pipelines must be supported by long term transportation contracts as well as predictable rules and regulations.
4. The lack of pipeline infrastructure has shifted development towards liquid natural gas (LNG) production and toward basins with the most LNG. Low prices have led to a revival of the steel and petrochemical industries.
5. As a pipeline company, Interstate Pipelines is focused on:
 - a. Building out LNG pipelines in the Eagle Ford region

- b. Construction of a LNG export terminal in Lake Charles, a trunk line LNG site that is currently only able to import LNG.
- c. Modifying pipeline systems, reversing the flow or abandoning and repurposing parts of existing pipelines.
- d. Increasing natural gas pipelines to help bring natural gas from the Marcellus and Utica regions to liquid locations where the natural gas can be sold to the market.
 - i. Interstate Pipelines is in the middle of the stakeholder process of this project.
 - ii. Early and productive participation by stakeholders is the only way that these projects can be successful.

Presenter: Rory Miller

Affiliation: Atlantic-Gulf, Williams

Main Points:

1. Williams has \$4.8 billion worth (rough calculation) of projects that are in some part of the regulatory process today. There are significant investments that will be made in similar projects in the years to come. Making progress on speeding up the regulatory process is of utmost importance to Williams.
2. The polar vortex provided a snapshot of where some of the current constraints lie. The additional infrastructure needed can only be put in place in a timely manner with increased regulatory certainty.
3. Williams' "Rockaway Project" called for less than four miles of pipeline, and serves the national grid system, mainly gas for end users in Queens and Brooklyn. The total construction time for the project will take about 8 months. However, it took 7 years to get through the regulatory process and receive all of the necessary permissions to begin construction. This is a prime example we believe the regulatory system requires change.
4. One way to improve the current system would be to get better communication among the all of the relevant agencies.
5. Another Williams' project ("Constitution Project") has been bogged down by narrow interest groups. A process that would provide accountability to the timelines; and having one lead agency to guide the process and to which all other agencies and stakeholders would abide by, would benefit the industry and allow the needed infrastructure to be installed.

Presenter: Ma Va Lor

Affiliation: Laborers' International Union of North America (LIUNA!)

Main Points:

1. Infrastructure investment has not only unleashed the resource potential of the Marcellus shale, but also the labor resource potential in the region.
2. Energy infrastructure investments are a lifeline to good union jobs, good pay and health care and retirement benefits that our members need.

3. We ask the QER Task Force to consider a few issues that are important to our members.
 - a. We believe that pipelines and other energy facilities be judged on their individual merits, using objective, consistent and transparent standards.
 - i. We supported H.R.3301, the North American Energy Infrastructure Act. While it is not a perfect piece of legislation, it does provide a framework for timely review of permit applications. Going further, we would like to see cross-border permit applications increase their focus and have an explicit focus on meaningful job creation.
 - b. We believe there should be a focus on improving the quality and efficiency of pipeline construction through skilled workforce development. Use of a highly trained local workforce, in conjunction with reputable contractors, is the best way to meet our nation's infrastructure needs.
 - c. We believe that the QER should find a way to provide better public disclosure on gathering pipelines. There is growing concern about the expense of unregulated gathering pipelines. It is our belief that greater transparency helps build public confidence, and as the potential to raise overall construction standards.

Presenter: Kris Evanto

Affiliation: Access Midstream

Main Points:

1. Access Midstream is actively developing assets in the Appalachian region, particularly in the Utica and Marcellus shale regions.
2. The existing and planned pipeline expansion in the region will allow Access Midstream to deliver natural gas and LNG to market.
3. I agree with Mr. Miller that inconsistent permitting regulations can have a huge effect on the amount of capital that the industry will wind up spending and the amount of time associated with a given project. Additionally, waiting 13 to 18 months for a permit to be approved has significant effects on Access Midstream's ability to serve its customers in upstream markets.
4. Depending on what district or region within the state, there are considerable differences in how the regulations are interpreted, or what is required to be submitted in the permitting packages. Some consistency in this region would be beneficial to the industry.

Presenter: Jim Sullivan

Affiliation: American Public Gas Association (APGA)

Main Points:

1. APGA members' primary focus is on providing safe, reliable and affordable service to their customers. Natural gas can play a critical role in meeting our energy needs, reducing greenhouse gas emissions and increasing overall efficiency.

2. APGA believes that national policy should facilitate the use of natural gas instead of other more carbon-intensive fuels where appropriate.
3. Municipal local distribution companies' primary source of capital is the issuance of tax exempt municipal bonds. APGA strongly supports the continued tax exempt status of municipal bonds, as they are efficient, stable and an effective means of building new public gas system infrastructure.
 - a. An alternative way to raise capital would be to raise the natural gas rates for customers, requesting an increase in local taxes, or requesting additional funds which would require cutting funding from other portions of the municipal budget.
4. Current law does not provide the Federal Energy Regulatory Commission (FERC) the authority to protect natural gas consumers from paying unjust and unreasonable rates to pipelines as they do for consumers of electricity. If a complaint is brought to FERC, they can only change the rates going forward from the completion of the complaint proceeding and cannot provide refunds to overcharged customers. This stands in contrast to the standing of electric consumers, who are protected under the Federal Power Act, Section 206.
 - a. This is an important issue for public gas systems, as 95% are captive to one interstate pipeline.

Panel Questions and Answers

Q: Do improvements to the regulatory process sacrifice safety and security, which is sometimes manifested through regulation?

Rory Miller

- I do not necessarily put the safety and integrity issues in the same boat as the permitting process, although through discussions with stakeholders they are somewhat intertwined. As long as you start the conversation with stakeholders early on in the process you can find the "least bad" path.

Shelly Corman

- There is nothing wrong with the FERC certification process. There is a lot of opportunity for stakeholder participation and for early comments. I think we should focus our efforts on ways to make sure that the conversation stays productive.

Rory Miller

- To build on Ms. Corman's comment, I will add that the creation of a lead agency that maintains the rules that everyone must play by, and can hold parties accountable to live up to those rules and associated timelines, will increase the overall efficiency of the process.

Ma Va Lor

- The process should be transparent, consistent and equally applied to all permits. This is not at odds with safety at all.

Kris Evanto

- Safety is our number one concern, and I do not really see a big connection between safety and permitting per se. Uncertainty and changing regulations are the biggest issue for us as we are trying to plan for years out in the future, and changes to the regulations can have major impacts on our plans.

Jim Sullivan

- No one here is looking to sacrifice safety. The desire to speed up the process is to get the necessary projects underway to avoid the price spikes that we saw during the polar vortex, and to no longer lose the economic activity in the New England region due to a lack of infrastructure.

Q: Do you have any specific recommendations for the federal government on how to deal with the differences between state, local and federal regulations?

Kris Evanto

- The major issue at hand is the unpredictability of the timelines. If you need to speak before a local township and they cancel the monthly meeting, it may be two or three months before you can get your opportunity to speak before that body.

Q: Is cybersecurity being adequately addressed in the natural gas industry?

Shelly Corman

- This is not my area of expertise, but it is certainly being addressed within the industry in a very serious manner.

Rory Miller

- We all have subject matter expert teams that are plugged into the various issues. We share across member companies and take the benefits of the lessons learned and spread them around throughout the industry.
- I think it would be more important for FERC to focus on the gas day issue and make sure that they do not attempt to fix a problem in the Northeast with a remedy for the entire country.

Ma Va Lor

- This is not my area of expertise either. One issue I can address is that we can educate the public as damage by third parties is the single largest cost for pipelines today.

Q: If you had one final comment or suggestion to the QER Task Force, what would it be?

Jim Sullivan

- I would encourage them to create a sense of urgency to get the necessary infrastructure projects carried out and to remove the infrastructure constraint facing the Northeast.

Kris Evanto

- I would urge them to focus on getting predictable rules and timelines for the permitting process.

Ma Va Lor

- I would encourage the Administration to pass and expedite the process of approving the Keystone XL pipeline.

Rory Miller

- My recommendation would be to identify a lead agency on the permitting and regulatory process that can ensure that all other parties follow transparent, predictable rules and timelines.

Shelly Corman

- I would focus on how to get involvement from stakeholders early in the process, to ensure that we are developing the best pipeline projects.

Panel III: How Public-Private Partnerships Can Produce Sustainable Economic Development Out to 2030 and Beyond



NOTE: All speaker presentations are posted on the QER webpage at: www.energy.gov/qer

Presenter: David Peebles

Affiliation: The Odebrecht Group

Main Points:

1. I would like to stress the importance of the ethane value chain to this region. We need to build “off ramps” on the ethane pipelines so that we can utilize the de-ethanizers that can refine the ethane that is produced and shipped through the region.
2. The region needs to build crackers that can transfer the ethylene to polyethylene, which would become the feedstock for many industries in the region.
3. We must have an understanding of the need for “off ramps,” as well as local and regional infrastructure, to facilitate delivery into the region. If we do not, we will miss out on a major manufacturing opportunity.

Presenter: Tom Conway

Affiliation: The United Steelworkers

Main Points:

1. The U.S. is missing out on significant opportunities by not coupling the energy policy with trade policy.
2. In the pre-shale boom, the U.S. faced dumping of natural gas infrastructure products (pipeline, pipe transmission, gas and oil transmission, downhole piping, etc.) into the American market by countries like China and Korea. This dumping led to significant layoffs in America and the shutdown of pipe mills from Texas to Pennsylvania.
 - a. We need to make sure that trade policies and protections are in place, and are enforced, to keep pipeline production here in the U.S.
3. Our union is weary of the growing desire to export of LNG. The potential manufacturing growth that will be driven by LNG is estimated to be \$200 billion. We urge the Administration to be cautious and consider limiting exports of LNG products.

Presenter: Dr. Andrew Gellman

Affiliation: Carnegie Mellon University

Main Points:

1. As an industry, we need to continue to be visionary, continue to think in the long term. We must be willing to take risks in order to reap the greatest benefit of the natural gas and LNG that we are able to access from shale regions.
2. Using the wet components in natural gas as the basis of a natural gas-based chemical industry is one of the methods or pathways that will lead to the greatest reward in U.S. society.
 - a. These components can be used to make plastics, rubbers, textiles, fuels, solvents—all things on which our modern daily lives depend. Each one of these products has far more value than natural gas itself.

- b. By taking the ethane and propane in the natural gas in the Marcellus shale region and converting it to ethylene and propylene, we can provide the feedstock needed for a successful chemical industry.
3. This type of effort will require infrastructure needs that are quite different than those that have been discussed earlier today. The upstream and midstream needs have been covered, however there are additional downstream needs that need to be addressed for processing of wet components of natural gas. The first of these infrastructure needs is the cracker.
 - a. Crackers are very large and very expensive. In order to facilitate their creation in the U.S., in this region, we need industry partnerships with the government or with the public sector to incentivize the building of crackers here.
4. We will have competition and will need to continue to develop new technologies to make the process more efficient in order to stay ahead of the market.
5. Lastly we need to invest in research into state-of-the-art environmental monitoring, processes and methods for minimizing human health impacts of natural gas and all of the processes that are incumbent or that arise from it.

Presenter: Jeff Herholdt

Affiliation: West Virginia Division of Energy

Main Points:

1. West Virginia is returning to its chemical industry roots by using the liquids-rich shale content of West Virginia's Marcellus and Utica shale plays.
2. The Chemical Alliance Zone (CAZ), a non-profit collaborative of citizens, labor leaders, educators, government officials, chemical industry executives and business leaders, was created in 1999 to channel and leverage efforts to strengthen West Virginia's chemical industry.
3. The Polymer Alliance Zone (PAZ) was created in 1996 to recognize and advance the polymer based industries located in West Virginia.
4. The history of the chemical industry, as well as the prior establishment of these public/private partnerships, place West Virginia in a good position to take advantage of the value-added opportunity in the liquids-rich shale developments in the region.
5. The West Virginia Development Office launched a concerted effort to attract ethane cracker plants to West Virginia.
 - a. Have a tentative commitment from Odebrecht to build a petrochemical complex in Wood County.
6. While traditionally the ethylene market migrated to the Gulf Coast, the unprecedented production levels of natural gas and associated natural gas liquids from our regional shared sources warrant economic development in our backyard.
 - a. Diversification will also benefit more local economies and will make the U.S. chemical industry more resilient.

Presenter: Jo Sexton

Affiliation: Cambridge (OH) Chamber of Commerce

Main Points:

1. Cambridge's industrial background is in glass production, which was brought to the region to produce glass using coal-fired ovens. When they learned of their natural gas deposits (Cambridge, OH is in the Utica shale region), they worked very closely with Williamsport, PA to learn what was going to happen and how they could best position themselves to deal with it.
2. Cambridge formed an energy coalition and eventually began holding seminars and conventions in Cambridge. By partnering with the local media station, which plays every one of the sessions on local television for the general public, they have been able to reach a larger segment of the public.
3. The education helped reduce some of the controversies that sometimes come along with the natural gas industry. It helped everyone understand how the industry works and how Cambridge can make the best of it.

Panel Questions and Answers

Q: Most of the feedstock from the Marcellus shale is sent down to the Gulf for processing. Are there any market influences locally here or nationally that could change this and is there a role for the federal government in influencing the market in order to make it more efficient?

David Peebles

- The market currently faces a "Wall Street" bias. DOE can help the industry by fostering fact based research into the natural gas, labor workforce and infrastructure capacity in the region. The investment decision will only come from good information about your resources, labor workforce, good and solid information about the research and development that you have available.

Tom Conway

- The next step for the region, which the federal government can assist with, is how to best take advantage of sitting on top of the shale play.

Dr. Gellman

- I view the main issue as an infrastructure problem. We need more infrastructure than the cracker, including skilled labor. It will require local governments, states and municipalities to get behind the whole development project.

Jeff Herholdt

- I think the most important thing the federal government can do with these kinds of developments is just let them happen.

Jo Sexton

- We like the idea of getting youth excited over these opportunities and to build the skilled labor base that we will need to fully take advantage of our shale resources.

Q: Is there a role for the federal government in other public/private partnerships?

David Peebles

- I think the federal government could focus on research and development in the polymer industry.

Tom Conway

- The government should help protect the new industry from being taken advantage of by foreign competitors.

Dr. Gellman

- The federal government can support research and development.
- However it will need to support industry in its goal of taking the results and converting them into products that are cost effective enough to survive in the marketplace, faster than the competition.

Jeff Herholdt

- The federal government can help bring the research coming out of the research consortium between Carnegie Mellon, Pittsburgh, West Virginia, Penn State and other colleges in the region to the industry.

Jo Sexton

- I am not sure that there is a federal role here.

Q: If you had one final comment or suggestion to the QER Task Force, what would it be?

Jo Sexton

- I would suggest that they provide funding and assist by providing grants that allow regions to implement solutions that work best for them.

Jeff Herholdt

- I would encourage them to be very serious with the “all-of-the-above” policy and look for a way to utilize the energy sector to stimulate the economy.

Dr. Gellman

- The QER Task Force should ensure that the public has a solid understanding of the realities around developing technologies based upon natural gas production.

Tom Conway

- The QER Task Force should find a way to collaborate more with other agencies in formulating the national energy policy.

David Peebles

- I encourage the group to focus on the ethane value chain and to create a cluster of economic development in this region.

Public Comments

The public is allowed to sign up to provide comments, and each commenter is allowed five minutes in which to make them. Each commenter was asked to approach one of the standing microphones as their name was called, introduce themselves, their organizations and make their comments. On the stage representing the DOE were Dr. Karen Wayland, Matt McGovern, John Richards and Kate Marks, all of whom are with the DOE Office of Energy Policy and Systems Analysis.

The DOE encourages everyone to file written comments at QERcomments@hq.doe.gov to ensure a wide variety of public input into the QER process.

Public Commenter Name: Paul Clemensick**Commenter's Main Points:**

1. I believe that the pricing in the natural gas markets should be driving the natural gas development and the resulting infrastructure.
2. I also believe that we need a control mechanism for natural gas pricing.

Public Commenter Name: Daniel Slater**Commenter's Main Points:**

1. I wanted to note that I found it odd that nothing on the agenda here today directly addressed climate change.
2. The plan should be to create a plan on how to not use fossil fuels and I am concerned that I heard none of that here today.

Meeting Conclusion

DOE's Dr. Karen Wayland expressed appreciation to everyone who took the time to present their views and participate in the process. She noted that all information is available on the QER website, www.energy.gov/qer and that comments can be submitted to QERComments@hq.doe.gov.

She recognized the hard work of the DOE and Energetics staffs, thanked the panelists and attendees, and informed the audience of upcoming meetings and the meeting adjourned.