



Commonwealth of Pennsylvania

Written Remarks for the Department of Energy's Quadrennial Review

Panel 1: Natural Gas Infrastructure – Historical and Current

Monday, July 21, 2014

The exploration and production of energy sources is not new to Pennsylvania, as the first commercial oil well was successfully drilled in 1859 by Edwin Drake in Titusville, PA. During the late 1800s, Pennsylvania provided 58% of the nation's total oil capacity. Although natural gas was routinely encountered by early oil developers, it was initially considered more of a nuisance than a resource. Recent advancements in drilling have allowed recovery of natural gas from the Marcellus, Utica and other unconventional formations. As methods for capturing, transporting, and using natural gas improved, a modern natural gas industry began to emerge and for the first time in 100 years, Pennsylvania shifted from importing 75% of its natural gas to being a net exporter.

Five years ago, most Pennsylvanians were unfamiliar with the terms such as “Marcellus Shale” and “hydraulic fracturing.” Today, Pennsylvanians have witnessed the steady transformation of the commonwealth into the second largest natural gas producing state in the nation. We are in the midst of an energy revolution and with that comes jobs, opportunities, and also new challenges.

In 2004, the first unconventional natural gas well was developed in Pennsylvania. Over the next few years, a renaissance in natural gas production emerged in Pennsylvania, making the commonwealth a dominant supplier of natural gas in the country. Natural gas operators are reporting increased production rates that are expected to continue rise over the next few years, making the discussion regarding critical infrastructure very timely.

In January 2014, Governor Corbett, published Pennsylvania's first State Energy Plan aptly entitled “Energy = Jobs”. Pennsylvania's energy policy is straight forward- All the Above and Below- reflecting our diverse energy portfolio. Home to abundant resources such as oil, natural gas, coal, nuclear, hydropower, wind, solar and other renewables, the Keystone State is a national leader in both energy production and resources diversity. This array of resources, paired with competitive energy markets, means affordable and abundant power delivered in a way that meets business needs. We're modernizing our infrastructure, making sure that we have a reliable grid that can efficiently harness all of our resources to drive our economy forward.

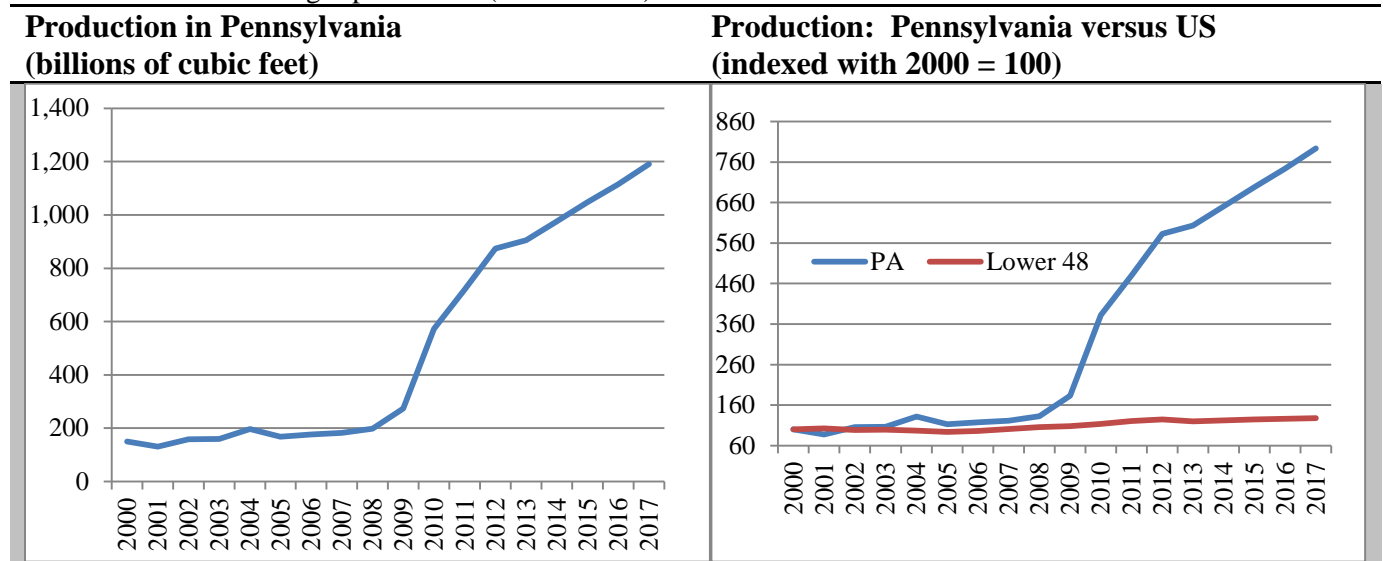
Increased Natural Gas Production

Shale gas underlies more than two-thirds of the Commonwealth, with development activities in nearly 40 of Pennsylvania's 67 counties and production has surpassed expectations. From the six month period July to December 2010, 271 billion cubic feet of natural gas was produced from Pennsylvania shale gas fields. Using the Department's most recent 6-month production data, the

amount of natural gas produced during a similar period increased more than 6 times that amount to 1.689 trillion cubic feet.

To highlight the initial expectations of gas production in Pennsylvania, the projections in Exhibit 1 below are based on 2010 U.S. Department of Energy's estimates for natural gas production in the Middle Atlantic region (New Jersey, New York, and Pennsylvania), a region where natural gas production is dominated by Pennsylvania. In 2010, these estimates predicted that by 2017 Pennsylvania was expected to produce 1.2 trillion cubic feet of natural gas. Based on Department data, Pennsylvania's gas production surpassed this estimate 5 years ahead of time in 2012.

Exhibit 1 Total natural gas production (2000 – 2017)



Source: Energy Information Administration

Recognizing Infrastructure Needs

Pennsylvania Department of Environmental Protection or (DEP) plays a vital role in the comprehensive oversight and regulation of the oil and gas industry in Pennsylvania. Although there are some related federal statutes overseeing the oil and gas industry, most laws and regulations reside at the state level. In Pennsylvania, DEP is the primary agency that is responsible for issuing permits and performing inspections at well sites, compressor stations and gathering lines.

In 2013, DEP issued approximately 3,000 well permits for the construction and operation of unconventional wells. Of this amount, 1,200 were actually drilled. Currently, there are over 7,000 unconventional wells drilled in Pennsylvania with approximately 70% of them producing gas. The remaining 30% of wells are not producing, for a variety of reasons, but many because they are waiting for the remaining infrastructure necessary to deliver gas to market.

Because of its history as an oil and gas producer, Pennsylvania has a significant existing network of large interstate and intrastate pipelines. According to the U.S. Energy Information Administration, as of the end of 2008, there were almost 8,700 miles of interstate and intrastate pipelines in place. Additions and expansions that have been completed in recent years have added more than 600 more miles, with other projects in varying stages of completion.

The more dynamic activity in the Pennsylvania pipeline infrastructure is likely to be in the development of new gathering pipelines to connect drilling sites with the larger network of interstate/intrastate pipelines. A recent study by the Nature Conservancy estimated 1.65 miles of these gathering pipelines were required for each new drilling site.

The highest natural gas producing counties in Pennsylvania in 2013 were Bradford, Susquehanna, Lycoming, Greene, Washington and Tioga, mostly rural counties. The gas produced in Pennsylvania passes through approximately 10,000 miles of gathering lines on its way to larger interstate and intrastate pipelines. Because most of the gas is produced in the most rural parts of the state, 90% of these gathering lines are defined as “Class I” gathering lines.

Regulation and oversight of the natural gas infrastructure in Pennsylvania is three-fold. In addition to the Department, the Pennsylvania Public Utility Commission (PUC) and the Federal Energy Regulatory Commission (FERC) play an important role in terms of inspections of natural gas transmission lines in Pennsylvania. DEP’s Office of Oil and Management is responsible for inspections of the construction of natural gas “gathering” lines, the PUC is responsible for safety inspection of intrastate natural gas transmission lines that carry natural gas to local markets, and FERC is responsible for inspection of interstate natural gas transmission lines that move natural gas to regional and national markets.

Supporting Infrastructure Development

The Pennsylvania Department of Environmental Protection has provided a strong regulatory framework improving environmental controls while allowing for the advancement of natural gas infrastructure development over the last several years. Through the extensive network of state laws and their implementing regulations and specific permit requirements, pipelines have been able to be constructed responsibly across the state to deliver Pennsylvania’s natural gas resources to consumers. In addition, state government has been able to respond quickly to challenges and changes in the overall energy landscape.

Modernizing the Environmental Regulatory Landscape

The majority of the oversight the Department takes regarding pipeline construction relates to erosion and sedimentation control. In 2010, the Environmental Quality Board amended regulations related to erosion and sediment control and stormwater management. The amendments incorporated the federal Clean Water Act “Phase II” National Pollutant Discharge Elimination System (NPDES) permit requirements for stormwater discharges associated with construction activities, codified post construction stormwater management (PCSM) requirements, including long-term operation and maintenance requirements of PCSM best management

practices (BMPs), included specific antidegradation implementation provisions, and updated erosion and sediment (E&S) control requirements.

In 2012, the Department finalized a more protective Erosion and Sediment Control General Permit -2 (ESCGP-2) and revisions to the Policy for Erosion and Sediment Control and Stormwater Management for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing, or Treatment Operations or Transmission Facilities. The revisions to the Stormwater Policy were the first since July 2003 and were intended to make the policy relevant to the type and scope of oil and gas activities currently occurring in Pennsylvania, including the construction of pipelines.

In response to all of the increased permitting and inspection responsibility, the Department's Office of Oil and Gas Management has increased staffing levels and continues to grow. In 2008, the Bureau of Oil and Gas Management employed a complement of 88 individuals. By 2013, that number rose to a complement of 202 and in April of this year, the Department increased the permit fee for drilling an unconventional well in order to hire additional permit writers and inspectors.

The Department is able to respond quickly to the changes of this industry. In 2008, the Office of Oil and Gas Management conducted 1,262 inspections of 377 unconventional wells. By 2012, the number of inspections increased to 12,680 inspections of 4,859 unconventional wells. This reflects an order of magnitude increase in the number of inspections that were conducted during this five-year period. The inspection rates remained steady during 2013 with 12,391 inspections of 5,559 unconventional wells.

In May 2013, the State Review of Oil and Natural Gas Environmental Regulations (STRONGER) conducted a programmatic and regulatory review of Pennsylvania's Oil and Gas program. STRONGER is a nonprofit, multi-stakeholder organization whose purpose is to assist states in documenting the environmental regulations associated with the exploration, development and production of crude oil and natural gas. The organization shares innovative techniques and environmental protection strategies and identifies opportunities for program improvement. On September 20, 2013 STRONGER published the results of their independent peer review of DEP's Office of Oil and Gas Management and found it to be proficient and ready to address the increase in oil and gas operations in Pennsylvania.

Utility Distribution System Improvement Charge (DSIC)

On Feb. 14, 2012, Governor Corbett signed Act 11 of 2012 which allows jurisdictional water and wastewater utilities, natural gas distribution companies, city natural gas distribution operations, and electric distribution companies to petition the Pennsylvania Utility Commission (PUC) for approval to implement a Distribution System Improvement Charge (DSIC).

Until this law was signed, utility companies had few options for repairing or replacing aging infrastructure. This law provided an avenue of cost recovery for these utility companies to repair, replace, or improve utility lines.

Public utilities are now able to petition the PUC for approval to establish a DSIC. The DSIC must be designed to provide for "the timely recovery of the reasonable and prudent costs incurred to repair, improve or replace eligible property in order to ensure and maintain adequate, efficient, safe, reliable and reasonable services."

The petition must contain the following elements: 1) initial tariff; 2) testimony and exhibits to demonstrate that the DSIC will ensure the provision of adequate, efficient, safe, reliable and reasonable service; 3) long-term infrastructure plan; 4) certification that a base rate case has been filed within the past 5 years; and 5) any other information required by the Commission. Moreover, the petition must demonstrate that granting the petition and allowing the DSIC to be charged will accelerate the replacement of infrastructure.

Pipeline Act

The Gas and Hazardous Liquids Pipelines Act (also known as "the Pipeline Act" or Act 127 of 2011) was signed by Governor Corbett on Dec. 22, 2011 and went into effect on Feb. 20, 2012. This law expanded the Commission's authority to enforce federal pipeline safety laws as they relate to gas and hazardous liquids pipeline equipment and facilities within the Commonwealth of Pennsylvania. The Pipeline Act requires the Pennsylvania Public Utility Commission to develop and maintain a registry of pipeline operators within Pennsylvania.

The PUC later adopted a Final Order clarifying that transmission pipelines and pipeline facilities in Class 1 locations are subject to federal pipeline safety laws and therefore are within the jurisdiction of the Commission under Act 127.

The PUC has also adopted an Implementation Order establishing the Act 127 initiatives of creating a statewide registry for non-public utility gas and hazardous liquids pipeline equipment and facilities within the Commonwealth; conducting safety inspections to enforce Federal pipeline safety laws on certain classifications of pipeline; and assessing entities for the costs.

Natural Gas Vehicle Funding

According to Natural Gas Vehicles (NGVs) for America, there are approximately 142,000 NGVs on U.S. roads today and more than 15.2 million worldwide. In the US, there are approximately 1,300 natural gas refueling stations. With natural gas prices less than the gasoline gallon equivalent, Pennsylvania promotes natural gas as a vehicle fuel is a cleaner and cheaper fuel alternative to gasoline. There are existing programs in Pennsylvania to incentivize the purchase, and retrofit of vehicles to natural gas and other alternative fuels, which also results in additional private investment in Pennsylvania.

In 2012, Governor Corbett signed Oil and Gas Act, Act 13, which provided \$20 million over three years, out of impact fees paid by natural gas operators, for the purchase or retrofits of large fleet vehicles 14,000 pounds or more to operate on CNG or LNG. In the first two years of the grant, \$14.4 million in funding has been awarded which will convert more than 700 vehicles to CNG or LN. The planned vehicle purchases will support construction of 28 new natural gas fueling facilities. Of these planned facilities, ten have full public availability, fourteen have

limited public availability, and four are private facilities. The first two years of this three-year program will account for 8.6 million gallons of diesel or gasoline displaced each year.

Positioned for the Future

The Marcellus Shale may be the most familiar shale gas producing formation, but there are other formations operators are targeting including the Burkett, Rhinestreet, and Utica formations. With advanced technology now it's possible that an operator may be able to extract the gas from multiple formations from one well pad. Leaps in technology as in the past will lead to increased production and a heightened demand for infrastructure.

We're fortunate enough in Pennsylvania to have these diverse and abundant energy supplies and as Governor Corbett outlines in his State Energy Plan, Pennsylvania will use these resources to move Pennsylvania forward: creating jobs; raising the standard of living for citizens; fostering a business climate that rewards innovation; advancing our nation's energy independence and enhancing our environment. Though none of this will be possible without a strong and reliable infrastructure, and as a commonwealth we are strongly positioned to build on our current successes.