Natural Gas Pricing and Economics Must Drive Policymaking in Pennsylvania

Sagging Commodity Prices Expected to Continue in 2015

Introduction

The Pennsylvania Independent Oil & Gas Association (PIOGA) has completed a detailed analysis, provided on right, of current market conditions facing natural gas producers in Pennsylvania. This chart details the selling price for methane and natural gas liquids, along with a breakdown of the costs to plan, develop and operate both conventional and unconventional wells. A more detailed explanation of each line item on the chart is also provided to supplement the analysis.

These are the current economic realities facing natural gas production in Pennsylvania:

- natural gas is selling in the range of $3 for one thousand cubic feet ($3/MCF), on average, and is expected to stay in that price range for the foreseeable future (according to the Financial Times of London, spot prices at one Marcellus trading point dropped to **$0.58** – *that's 58 cents* – last Friday, January 2);
- drilling gas wells in this challenging environment will generate a negative return on investment, and most wells that are currently being drilled are tied to fixed contracts for production or to avoid lease-related penalties;
- an additional severance tax would make this situation significantly worse, resulting in fewer wells being drilled, fewer jobs and less economic activity;
- a new tax would bring in substantially less revenue than the amounts projected by organizations that have used dated information or rosy estimates to calculate tax payments; and
- any additional tax on conventional producers, Pennsylvania's traditional oil and gas operators, will put them out of business.

PIOGA has developed this analysis to alert legislative and executive branch leaders about these negative economic conditions and the long-term consequences of any new tax on natural gas development. The commodity prices, deductions and costs reflected in this analysis are based on January 2015 market conditions, and include their impact on a typical conventional natural gas well, and both "wet" and "dry" unconventional wells drilled in shale formations.

PA Natural Gas Pricing & Analysis - 2015			
	Conventional Natural Gas Well	Marcellus Dry	Marcellus Wet
Sales Price Future Quote for 2015 (NYMEX)	$3.23	$3.23	$3.23
BTU Premium	$0.14	$0.14	$0.32
Liquids Premium		$0.00	$1.30
PA Location Deduction From NYMEX	($1.20)	($1.20)	($1.20)
Net Revenue per MCF YTD 2014:	**$2.17**	**$2.17**	**$3.65**
Costs			
Royalty to Landowner	$0.20	$0.17	$0.39
Lifting Costs (well tending, water disposal, etc)	$1.40	$0.30	$0.65
Gathering and Transportation Costs	$0.60	$1.05	$1.05
Processing for Liquids from Well			$0.70
General & Administration*	$0.38	$0.32	$0.37
Total Direct Costs:	**$2.57**	**$1.83**	**$3.16**
Cash Flow prior to Impact Fee:	**($0.40)**	**$0.34**	**$0.49**
Average Impact Fee		($0.13)	($0.14)
Cash Flow from Operations:	**($0.40)**	**$0.21**	**$0.35**
Costs to Drill a Well (Finding & Development Costs)	**$2.30**	**$0.90**	**$0.80**
Cash Return on Investment (per mcf):	**($2.70)**	**($0.69)**	**($0.45)**

* The numbers above do not include costs for plugging a well when production ceases. The average cost to plug a conventional well in 2014 was approximately $30,000.

Pricing Analysis

The January NYMEX commodity price for natural gas futures is reflected in the $3.23/MCF that is applicable to conventional and unconventional wells. This price is approximately 38 cents/MCF less than that of December 2014, and can be expected to remain depressed due to the robust supplies of gas being produced around the United States.

The "BTU Premium" added to price of gas from all three categories of wells reflects a higher price paid for "richer" methane that has greater BTU content and more value on the open market. As shown, the BTU value is greatest for natural gas from a typical wet unconventional well. Natural gas from wet formations also yields valuable liquid products, including ethane, butane and propane, which are removed from the methane stream, separated into purity products and marketed for a range of heating, industrial and manufacturing purposes. This increased value is reflected in the Liquids Premium of $1.30/MCF.

The pricing "drag" on all natural gas being produced in Pennsylvania comes in the form of the $1.20/MCF NYMEX deduction subtracted from the value of gas due to infrastructure bottlenecks and related problems moving natural gas from the wellhead to end users. This constricted marketing scenario is expected to continue for some time due to the slow pace of building new and larger pipelines to reach industrial, commercial and residential consumers.

Analysis of Costs and Impact Taxes

The fixed costs related to each category of natural gas wells are more variable than with price and revenue factors. Royalty payments to landowners are tied directly to the value of gas from a well, and are currently higher for gas with liquid content. Lifting costs include long-term maintenance, safety and production services required for every well, and are the highest for conventional wells, which produce a fraction of the natural gas than that of a shale well, but must be monitored and maintained with equal frequency, resulting a higher cost "per-MCF" for manpower and related services.

Gathering and transportation costs are higher for all unconventional wells due to the need to build new pipelines and infrastructure, and are reduced for conventional wells that have long-established contracts with local distribution companies to market gas from those wells. Liquids processing costs, applied only to wet gas wells, are paid to plants that separate liquid components into purity products. General administration costs, such as regulatory and reporting requirements, are similar/MCF for all wells.

The final costs affixed to the three categories of natural gas wells include the Act 13 Impact Tax associated with shale wells and those tied to the "exploration and development" process. Like the long-term lifting costs, developing a conventional well with lower production levels is far more costly "per MCF" than that of a shale well.

Conclusions and Policy Implications

PIOGA's economic analysis assigns realistic numbers to the revenues and costs currently associated with producing natural gas in Pennsylvania. The results reflect a continuing negative trend in the return on investment for the industry in the Commonwealth under these conditions, which has seen a significant drop in its unconventional rig count since the imposition of the current Impact Tax in 2012. In addition, the number of conventional wells drilled in Pennsylvania each year dropped almost 85 percent between 2007-2014.

Burdening the industry with an additional severance tax may provide a short-term increase in revenue to Pennsylvania's General Fund, but far less than estimates circulating in recent months. The longer-term implications of such a tax, with the current realities of supply and demand and competition from other states for capital investment, will be reductions in drilling, job growth, economic activity and broad-based tax revenue to the Commonwealth.