A Look Inside Marcellus Workforce

This column is presented weekly by the Public Education sub-committee of the Clinton County Natural Gas Task Force in an effort to provide accurate, up-to-date information on activities surrounding the Marcellus Shale formation and the natural gas exploration industry.

Last Thursday the newest Marcellus Shale Workforce Needs Assessment was released in Southwestern Pennsylvania by the Marcellus Shale Education and Training Center (MSETC) in cooperation with the Southwest Pennsylvania Oil and Gas Industry Partnership, through funding provided by the Pennsylvania Department of Labor and Industry. Although the study focused on Beaver, Washington, Greene, Fayette and Westmoreland Counties, the findings were very comparable to a similar study released last June looking at 14 counties in Central and Northern Tier Pennsylvania.

The new study was developed to help local economic development agencies and education providers better understand the workforce needed to drill a single Marcellus well, how to project future natural gas development needs, and how the Marcellus workforce pipeline might be filled with Pennsylvania employees.

The model developed by the Marcellus Shale Education and Training Center uses no complicated economic modeling, is not limited by industry groups, does not exclude jobs based on geography, and can easily be adapted to new rig and well counts. The MSETC model simply uses personal interviews, publically available company information, and online needs assessment to answer how many rigs will be operating in an area, how many wells will be drilled, and how many miles of pipeline will be developed. After the interviews, data review, and online assessment are complete, all the information is pulled together to create a per well estimate of workforce need.

In fairness, the new study is limited in some ways by the fact it does not provide business specific information or work place location, and it does not count all employment created by natural gas industry spending or the spending of natural gas employees, lease holders or royalty owners.

Even using a relatively conservative approach, the model found it takes 420 different people across about 150 different occupations to bring a single Marcellus well into production. Occupations needed in natural gas development ranged from roustabouts to geologists and helicopter pilots to lawyers. Roughnecks, roustabouts, and general office workers make up about 40% of the total workforce. Although there is not a standard definition across the oil and gas industry, roustabouts ‘generally’ work around the well pad and roughnecks are ‘usually’ associated with the drilling rig. General office workers may be affiliated with occupations such as corporate development, community relations, information technology, accounting, and human resources. Another 33% of the workforce operates heavy equipment, drives truck, or has a specific oil/gas field skill such as directional drilling, cementing, or wire line.

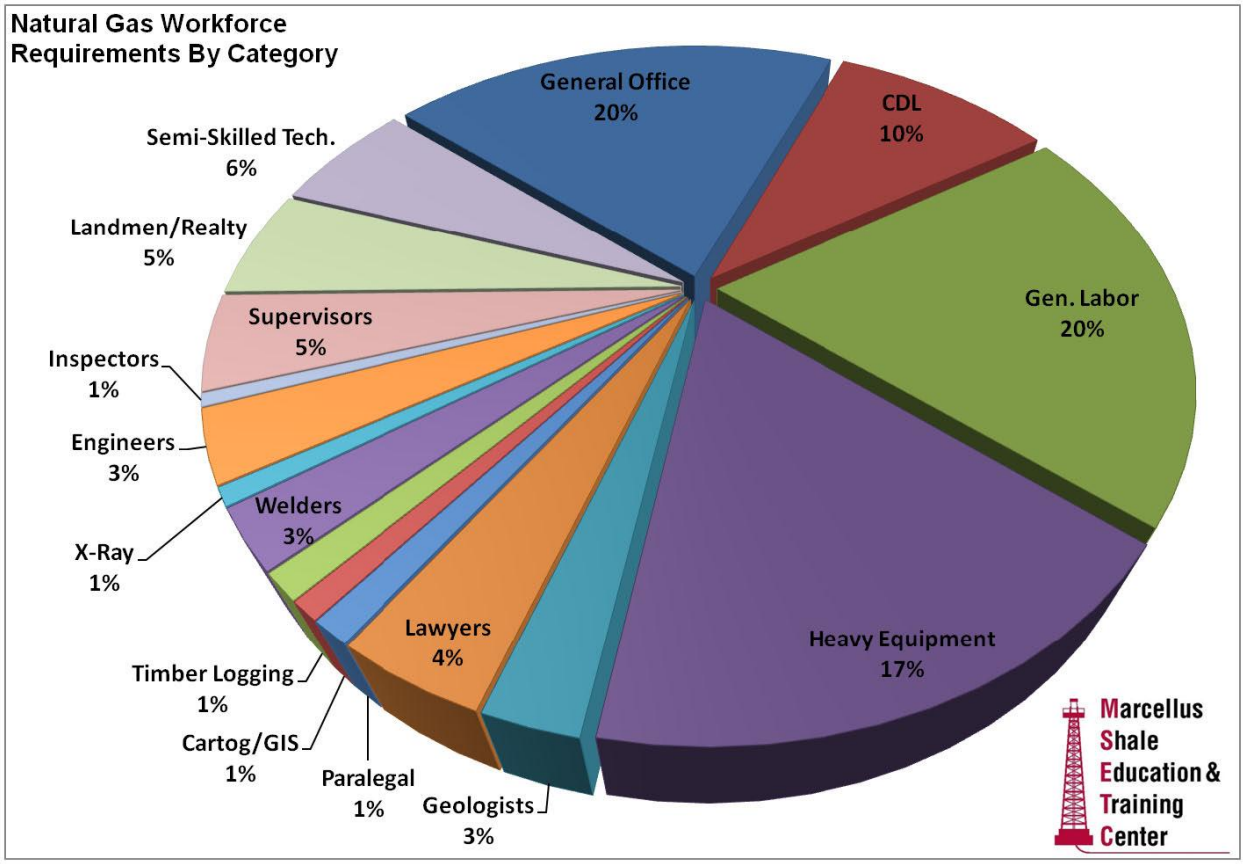
About 75% of the natural gas occupations require a high school education or some form of certification. A few examples of common certifications include commercial driver's license, welding, down-hand welding, electrician, and programmable logic controls. The remaining 25% of jobs require some form of advanced degree. Examples of natural gas jobs requiring a degree might include geologist, geographic information systems technician, attorney, or engineer.

When we take the total hours worked by the 420 individuals, we find a fulltime equivalent (FTE) estimate of 13.10 direct jobs to bring a dry gas well into production and 13.30 fulltime jobs to bring a high BTU gas well online. Of the fulltime jobs, 12.9 FTE's per well are required during the pre-drilling and drilling phase of development, 0.18 FTE's per well are required during the production phase for dry gas wells, and .38 FTE's per well are required for high BTU gas development. High BTU gas or wet gas burns too hot for standard household appliances and requires some additional processing to extract other hydrocarbons such as oil, propane, butane, and ethane.

To illustrate the model, if a county has ten rigs operating, over the course of a year those rigs would drill 100-150 natural gas wells. Using the 13.10 FTE per well estimate, about 1,291-1,936 fulltime jobs would be created to support pre-drilling and drilling operations, 15-27 fulltime jobs would support production, and in high BTU gas areas 20-30 fulltime jobs would be created for natural gas processing.

Predicting future trends in the gas industry, particularly with respect to workforce needs, is challenging at best given the uncertain nature of the industry and natural gas commodity prices, as a result the MSETC developed three possible projection scenarios. The scenarios provide a 'low scenario' estimate, a 'likely scenario' estimate, and a 'high scenario' estimate for future workforce needs. Using the three different scenarios we find 8,160-13,559 direct natural gas jobs will be needed in just Southwest Pennsylvania by 2014. Of the total jobs, 801-1,293 will be affiliated with natural gas production and processing. The Southwest employment trends are very similar to what we might expect in Central Pennsylvania as Marcellus development activity continues to expand.

The new study also indicated the three biggest challenges the Marcellus industry faces are finding people willing work the hours needed, finding workers with natural gas industry knowledge, and finding workers with technical skills. Although we have seen a sharp increase in the number of Texas, Oklahoma, Louisiana, and Canadian license plates, Pennsylvania residents are getting jobs in the natural gas industry. In fact, according to the Clinton County Economic Partnership, more than 10 companies have already located in the county employing over 200 people. Additionally, a required safety class for energy company contractors offered through the MSETC has trained over 600 natural gas workers and found 93% of the participants held a Pennsylvania drivers license. Yes, there are people from other parts of the country here in Central Pennsylvania working in natural gas, but through patience, persistence, and perseverance Pennsylvania residents are indeed being employed by natural gas energy, service, and support companies.

To download a free copy of the Northern Tier/Central Pennsylvania or the Southwest Pennsylvania Marcellus Shale Workforce Needs Assessment, point your web browser to www.msetc.org.

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