

CONGRESSIONAL NATURAL GAS CAUCUS

Washington, DC • July 26, 2012

PREPARED TESTIMONY:

THE ECONOMIC AND EMPLOYMENT CONTRIBUTIONS OF UNCONVENTIONAL GAS DEVELOPMENT

by John W. Larson, Vice President, Public Sector, IHS Consulting

Distinguished members of the Natural Gas Caucus, it is an honor to speak with you today regarding the challenges and opportunities for natural gas to fuel economic growth. My name is John Larson and I represent IHS Global Insight, one of the world's largest economic forecasting companies. Since 2009, our company has engaged in a number of studies around the dramatic changes occurring within the natural gas industry spurred on by the rise of unconventional gas development—including shale, tight sands, and coal bed methane. Today, I would like to discuss our two most recent studies which examined the economic and employment contributions of unconventional natural gas development.¹ These studies, which focus on 58 unconventional gas plays across the lower 48 states, assess the economic impact at both a national and individual state level.

¹ *The Economic and Employment Contributions of Unconventional Gas Development in State Economies*; IHS Global Insight December 2011 & *The Economic and Employment Contributions of Shale Gas in the United States*; IHS Global Insight June 2012

The rapid growth in unconventional gas production is one the most significant energy developments in recent decades.

- In large measure due to this rapid rise in unconventional activity, total natural gas production in the US Lower 48 grew by nearly 30% between 2005 and 2011 – from 48.2 Bcf per day to 62.1 Bcf per day in 2011.
- Unconventional gas activity accounted for 61 percent of total U.S. natural gas productive capacity in 2011 and is projected to rise to 85 percent of total U.S. natural gas production by 2035.
- Estimates of the recoverable natural gas resource base in the US Lower 48 doubled between 2005 and 2009 – growing from about 1,400 Tcf in 2005 to more than 2,800 Tcf in 2009. This includes proved reserves as well as probable and possible resources and includes conventional resources as well as unconventional resources.
- Total natural gas consumption in the US Lower 48 in 2011 was 66 Bcf per day, or 24 Tcf for the year. This means that US Lower 48 resources of 2,800 Tcf would be enough to supply current consumption rates for over 100 years
- The total natural gas resource base in North America is more than twice as large (on an energy-equivalent basis) as Saudi Arabia's proved reserves of crude oil. Just the unconventional gas resource base in itself is larger than Saudi Arabia's crude oil reserves.

And as a result, this striking shift in the availability of natural gas is having a dramatic impact on the nation's economy in terms of stimulating job creation and economic growth. Among our studies' key findings were:

- Nearly \$3.2 trillion in cumulative investments in the development of unconventional gas are expected to fuel the increase in production between 2010 and 2035.

- 1 million workers supported this rapid expansion in unconventional activity in 2010; by 2015 the number will have climbed to nearly 1.5 million and by 2035 will reach more than 2.4 million.
- The unconventional gas contribution to the U.S. gross domestic product (GDP) was more than \$133.4 billion in 2010; in 2015 it will be \$196.5 billion and will reach \$331.7 billion in 2035
- Government revenue from unconventional gas activity was \$33.7 billion in 2010 and is projected to reach more than \$49 billion annually by 2015 and will continue to rise, to just over \$85 billion by 2035.
- Over the study's entire 25-year horizon, unconventional gas is expected to generate nearly \$1.5 trillion in total government revenue.

While these aggregate national numbers are impressive, one of the most interesting findings from our study was that fact that when it comes to unconventional natural gas, a state does not need to have a gas play to benefit economically from the activity. In fact, jobs supporting the unconventional activity are spread across all lower 48 states and the District of Columbia.

- The 20 “producing” states – defined as having both existing and new well completion and/or production activities – contributed more than 826,000 jobs in 2010 and that number will grow to nearly 1.2 million jobs by 2015.
- The 28 “non-producing” states – defined as the 28 states and the District of Columbia that do not include current or projected unconventional gas resource development – contributed more than 182,000 jobs in 2010 and that number will grow to nearly 270,000 jobs by 2015.

- Between 2010 and 2015, the Top 10 producing states (as ranked by unconventional gas-related employment) – Texas, Louisiana, Colorado, Pennsylvania, Arkansas, Wyoming, Ohio, Utah, Oklahoma and Michigan – will experience a compound annual employment growth rate of nearly 8 percent from their respective unconventional activities. Meanwhile, total US employment is expected to grow at a significantly lower average rate of 1.6 percent during the same period.
- 1 in every 5 jobs created through the unconventional gas activity will be sourced from “non-producing” states. As a result, “non-producing” states will recognize job, tax revenue, and gross state production benefits from these ongoing activities.

A key reason for the profound economic impact of the unconventional gas activity is the fact that it combines a capital-intensive industry with a broad domestic supply chain. The United States is a leader in all parts of the unconventional gas industry, which means that most of its suppliers are domestically-based, and that means a larger portion of the dollars spent are supporting domestic jobs in trucking, steel fabrication, aggregates, heavy equipment manufacturing, hotels, and restaurants, among others.

In addition to these specific contributions to the economy, there are larger macroeconomic effects attributed to the savings brought about by lower natural gas prices and corresponding electricity prices.

- For U.S. based industries the abundance of affordable natural gas means lower input and feedstock prices. As a result, industrial production – the measure of output from manufacturing, mining, and utility industries – will increase 2.7 percent by 2015 and 4.7 percent by 2035.

- For households, these lower prices cascade through the economy resulting in a \$926 increase in annual average disposable income in 2015. By 2035 annual average disposable income per household will have increased by more than \$2,000.

Finally, I would like to briefly discuss our assumptions and methodologies. In measuring the economic contribution presented in this study, we relied on techniques for modeling supply chains – similar to those used by the U.S. Department of Commerce Bureau of Economic Analysis and the Congressional Budget Office. We linked these techniques with the dynamic capabilities of proprietary IHS Global Insight macroeconomic models to capture the industry's comprehensive contribution and impact on the economy. The results presented represent a conservative estimate on several grounds.

- The study constrained future production and investment profiles by realistic natural gas market demand as well as technical and economic feasibility to develop the various unconventional plays.
- The study did not consider production or investment activities from additional unconventional plays that had not begun development at the time of the study, nor did it assume any future development of plays that have yet to be discovered.
- Each play with the study was independently evaluated to reflect regulatory environments in each region and production profiles were adjusted to reflect little or no development if there was uncertainty as to regulation or opposition to access. For example, we did not consider any new drilling in New York (after 2009) in this analysis.
- The study did not consider the economic benefits accruing to the US suppliers who are supplying the Canadian unconventional gas industry.

- The study did not quantify the broader macroeconomic impacts of job creation in industries that shift investment back to the United States as a result of new low-cost gas supplies (for instance, petrochemicals and manufacturing).

In conclusion, let me add that, in this time of deep concern about jobs, it is very striking to see how large a job creator this new unconventional gas industry is proving to be – and what it means in terms of larger government revenues.

John W. Larson is the Global Industry leader for the Public Sector industry in IHS Global Insight's Public Sector Services Group and is the lead of the Federal Government Services industry vertical. In this capacity, Mr. Larson has led the economic analysis and impact assessment on a wide range of critical policy issues covering energy, healthcare, and government entitlement programs. With more than 15 years of experience in serving both private and public sector clients and delivering award-winning solutions—such as the application of predictive analytics in a due diligence context for the Department of Energy alternative energy loan guarantee program and the design and implementation of fraud framework techniques for the United States Postal Services' Office of Inspector General—Mr. Larson brings his deep knowledge of the intersection between government policy, economic theory, econometric modeling, and data analytics to inform policymakers and shape policy decisions.

Mr. Larson has developed extensive expertise in transforming traditional government data systems that support many of the policy programs throughout the public sector into sources of critical information. By integrating these transactional level databases with other third-party data and proprietary IHS data, Mr. Larson is able to conduct data mining, econometric modeling, and statistical analysis to reveal transformative insights that lead to more effective government policies and procedures. Additionally, Mr. Larson has extensive expertise in the integration of data to create policy simulation tools and to generate policy impact scenarios and forecasts.

In his work, Mr. Larson has addressed critical business questions through microsimulation tools that predict individual behavioral patterns, forecast market shares, and anticipate rarely occurring events, such as loan defaults, medical recovery, or fraud activities. Before joining IHS in 2005, Mr. Larson held positions at Deloitte & Touche, IBM, PricewaterhouseCoopers, and Price Waterhouse, providing data-driven analytical solutions, modeling, and forecasting.

Mr. Larson holds a Bachelor of Arts degree in economics and history and a Masters of Public Policy from the Thomas Jefferson Program in Public Policy, both from the College of William and Mary.