

Congress of the United States
U.S. House of Representatives
Committee on Small Business
2361 Rayburn House Office Building
Washington, DC 20515-6515

Memorandum

To: Members, Subcommittee on Agriculture, Energy, and Trade

From: Committee Staff

Date: June 17, 2013

Re: Hearing: "The New Domestic Energy Paradigm: Potential Benefits for Small Businesses and the Economy"

At 10:00 am on June 20, 2013, in room 2360 of the Rayburn Building, the Subcommittee on Agriculture, Energy and Trade of the Committee on Small Business will meet for a hearing titled, "The New Domestic Energy Paradigm: Potential Benefits for Small Businesses and the Economy." The hearing will examine the potential economic benefits of increased oil and natural gas production to the United States, with a special emphasis on how these potential economic benefits, and associated jobs created, could accrue to small businesses.

Unconventional Oil and Natural Gas Resources in the United States

Until very recently, many geologists, energy market participants and policymakers assumed that the overall rate of domestic oil and natural gas production had peaked.¹ This outcome could result in the potential for higher prices and necessitate a combination of increased oil and gas imports, conservation measures to reduce demand for petroleum and the development of alternative sources of energy to supplant the use of petroleum as a fuel source. However, the advent of new technologies and changes to petroleum market fundamentals have made it economical to produce significant quantities of oil and natural gas from unconventional fields² and have significantly increased the amount of proven reserves in, and the production potential of, the United States.

¹ The production of hydrocarbons from geologic formations typically follows a curve during which production from a field reaches a peak and then begins to decline, often referred to as depletion. The theory of peak oil stipulates that the worldwide production of oil and gas will reach a peak before entering into a permanent period of decline. The timing of this potential production peak is the subject of much dispute and is dependent on a number of variables. Needless to say, oil and gas markets are not static, and the advent of new technologies and changes to market fundamentals alters the supply and consumption of oil and natural gas. DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD 235-37 (2011).

² UNIVERSITY OF TEXAS PETROLEUM EXTENSION SERVICES, FUNDAMENTALS OF PETROLEUM 244 (5th ed. 2011). Unconventional fields are generally those where the geological formations lack sufficient porosity or permeability to allow hydrocarbons to flow freely into the wellbore under natural pressures. Until recently, many unconventional resources have not been considered economically viable sources of hydrocarbons.

According to recent estimates, after decades of persistent declines, domestic crude oil production, predominantly from unconventional fields, is expected to increase by an average rate of 234,000 barrels a day (bpd), reaching a production rate of 7.5 million bpd by the year 2019.³ Overall, proven oil reserves are estimated at approximately 23.3 billion barrels in 2010, an increase of 3 billion barrels over 2009.⁴

In 2010, the proven reserves of natural gas stood at approximately 304 trillion cubic feet (tcf), an increase of 165 percent since 2001.⁵ A significant amount of these reserve improvements were derived from unconventional fields. Overall, the domestic production rate of natural gas has increased from approximately 50 billion cubic feet per day (bcf/d) in 2007 to approximately 65 bcf/d in 2012, nearly 50 percent of which was derived from unconventional shale and tight gas.⁶ By 2035, total natural gas production rate is forecast to approach 100 bcf/d, of which 80 percent will be derived from unconventional sources.⁷

The development of these additional resources will have potential beneficial impacts on the United States economy. In turn, these impacts will redound to the benefit of small businesses.

Potential Economic and Fiscal Policy Benefits of Petroleum Production to the United States

The production of oil and natural gas resources could provide several benefits to the United States economy as a whole. For example, as a net importer of crude oil and natural gas, supplanting imports with domestically produced resources could, holding all else constant, reduce our nation's current account trade deficit.⁸ According to one recent study, over the next seven years, increased domestic oil and gas development could reduce the current account trade deficit by 60 percent.⁹

Studies also forecast that governments stand to realize significant fiscal policy benefits from increased oil and gas production. According to one estimate, unconventional oil and natural gas activity is expected to contribute up to \$111 billion in federal, state and local tax receipts in 2020, up from \$62 billion in 2012.¹⁰

³ UNITED STATES ENERGY INFORMATION AGENCY, ANNUAL ENERGY OUTLOOK 2013, at 81 (April 2013), *available at* [http://www.eia.gov/forecasts/aeo/pdf/0383\(2013\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf).

⁴ UNITED STATES ENERGY INFORMATION AGENCY, U.S. CRUDE OIL, NATURAL GAS, AND NATURAL GAS LIQUIDS PROVED RESERVES, 2010, at 22 (August 2012) [hereinafter "Inventory Report"], *available at* <http://www.eia.gov/naturalgas/crudeoilreserves/pdf/uscrudeoil.pdf>. Proved reserves are defined as those quantities of hydrocarbons that are assumed to exist based on geologic knowledge and which can be economically produced with existing technology at current market prices. This is why proved reserve estimates can rise and fall with the commodity's price. UNITED STATES ENERGY INFORMATION AGENCY, GLOSSARY, *available at* <http://www.eia.gov/tools/glossary/index.cfm?id=p>

⁵ Inventory Report, *supra* note 5 at 22. This figure is for dry natural gas. Overall, geologists predict 2,384 tcf of domestic natural gas reserves, of which 2,226 tcf are classified as Technically Recoverable Reserves. Press Release, Potential Gas Committee, Potential Gas Committee Reports Significant Increase in Magnitude of U.S. Natural Gas Resource Base (April 9, 2013), *available at* <http://potentialgas.org/download/pgc-press-release-april-2013.pdf>.

⁶ IHS GLOBAL INSIGHT, AMERICA'S NEW ENERGY FUTURE: THE UNCONVENTIONAL OIL AND GAS REVOLUTION AND THE U.S. ECONOMY, VOLUME 1: NATIONAL ECONOMIC CONTRIBUTIONS 15 (October 2012) [hereinafter "National Economic Contributions Report"].

⁷ *Id.*

⁸ The export of domestically produced petroleum and petroleum products, such as the export of liquefied natural gas, also would have a positive influence on the United States current account balance.

⁹ CITIGPS, NORTH AMERICA, THE NEW MIDDLE EAST? 10 (March 20, 2012) [hereinafter "CitiGPS Report"], *available at* <https://ir.citi.com/%2FSyMM9ffgFOZguStaGpnCw5NhPkvdMbbn02HMA05ZX%2BJHjYVS07GqhxF2wMk%2Bh4tv7DEZ5FymVM%3D>.

¹⁰ National Economic Contributions Report, *supra* note 6, at 2.

An additional benefit of increased oil and natural gas development is the influence these increased supplies will have on the price of these commodities. For example, as a result of increased domestic natural gas production, the average wellhead price for natural gas has fallen from an average of \$7.97 per tcf in 2008 to \$2.66 tcf in 2012.¹¹ Assuming the forecast increases in expected supply, the average price of natural gas is projected to average \$5.15 per million cubic feet (constant 2010 dollars) through 2035,¹² or about half of what they otherwise would have been without the development of unconventional natural gas resources.¹³

As beneficial as these outcomes are in their own right, the Committee is particularly interested in the potential economic and employment effects of producing these resources that may accrue to small businesses. To better understand how the development of oil and natural gas resources may benefit small businesses, the memorandum will now describe its direct, indirect and induced job creation benefits.

The Small Business Job Creation Benefits of Increased Domestic Oil and Gas Production

Direct Employment Benefits

Direct jobs are defined as those activities related to the exploration, production, transporting and delivery of oil and natural gas to downstream elements or activities that provide critical on-site equipment and services.¹⁴ According to one study, the development of domestic conventional and unconventional oil and natural gas resources could create more than 550,000 jobs in the oil and gas sector by the year 2020,¹⁵ while another study estimates the direct job creation benefits of unconventional oil and gas alone will create more than 600,000 direct jobs by the year 2020, increasing to 725,000 jobs by the year 2035.¹⁶

Since the majority of oil and natural gas firms are classified by SBA as small businesses, a large number of these forecast jobs could be created by small oil and gas producers. Of the 7,568 firms involved in crude oil and natural gas production, approximately 6,710, or 88 percent, meet the United States Small Business Administration's definition of a small business.¹⁷ While there is no federal data on the percentage of domestic oil and natural gas these small businesses produce, a recent study estimated that onshore independent oil and gas producers account for approximately 45 percent of domestically produced oil and 65 percent of domestically produced natural gas.¹⁸

¹¹ UNITED STATES ENERGY INFORMATION ADMINISTRATION, DATA, ANNUAL, U.S. NATURAL GAS WELLHEAD PRICE, available at <http://www.eia.gov/dnav/ng/hist/n9190us3A.htm>.

¹² IHS GLOBAL INSIGHT, THE ECONOMIC AND EMPLOYMENT CONTRIBUTIONS OF SHALE GAS IN THE UNITED STATES 8 (December 2011) [hereinafter "IHS Shale Gas Contributions Report"].

¹³ *Id.* at v.

¹⁴ IHS GLOBAL INSIGHT, AMERICA'S NEW ENERGY FUTURE: THE UNCONVENTIONAL OIL AND GAS REVOLUTION AND THE U.S. ECONOMY, VOLUME 2: STATE ECONOMIC CONTRIBUTIONS 10. (December 2012) (hereinafter "State Economic Contributions Report"). Upstream unconventional oil and gas activity, on average, demonstrates one of the larger employment multipliers as much of the knowledge, technologies, tools and services used in the industry are domestically derived. In addition, the larger an industry's multiplier, the more residual economic benefits, such as indirect and induced employment contributions, will be experienced across the economy. National Economic Contributions Report, *supra* note 6 at 26, 27.

¹⁵ CitiGPS Report, *supra* note 19, at 79.

¹⁶ National Economic Contributions Report, *supra* note 6 at 27.

¹⁷ UNITED STATES SMALL BUSINESS ADMINISTRATION, OFFICE OF ADVOCACY, U.S. STATIC DATA, U.S. DATA, STATISTICS OF U.S. BUSINESSES, FIRM SIZE DATA (2009), available at <http://www.sba.gov/advocacy/849/12162>. (NAICS Codes 21111, 21112).

¹⁸ IHS GLOBAL INSIGHT, THE ECONOMIC CONTRIBUTIONS OF ONSHORE INDEPENDENT OIL AND NATURAL GAS PRODUCERS IN THE U.S. ECONOMY 1 (April 2011) available at <http://www.ipaa.org/wpcontent/uploads/downloads/2012/03/IHSFinalReport.pdf>. The IHS study classifies independent producers as those with upstream activities, i.e. the extraction of oil and gas. Vertically integrated producers, in addition to extraction, also

At the same time, as significant as these employment contributions appear, they represent only between 20-25 percent of the total number of potential jobs supported by unconventional gas development.¹⁹ A far greater number of jobs could be created indirectly and outside of the oil and natural gas industry.²⁰ It is to these benefits that we now turn.

Indirect and Induced Economic Benefits

Indirect employment benefits are generally defined as those that accrue as the result of activities in outside industries that supply materials and services to the developers of unconventional oil and gas and to their suppliers.²¹ Oil and gas production activity requires significant capital investments and employment in industries that supply materials and services to oil and gas producers.²² As activity at firms directly involved in oil and gas production increases, so does the firms' demand for products and services from supplier firms. A majority of the indirect jobs supported by oil and gas development are forecast to be created in construction, fabricated metal product manufacturing, primary metal manufacturing, professional, scientific, and technical services, and wholesale industries, to name a few.²³

Induced jobs are generally those created when workers directly and indirectly involved in oil and gas production spend their incomes in the broader economy on consumer goods and services.²⁴ Induced jobs created by oil and gas development are forecast to accrue to businesses in administrative and support services, accommodation services, food and beverage services, health care and general merchandise retailing, among other sectors.²⁵

Most of the expected indirect and induced jobs will be created in producing states. According to one recent study, unconventional oil and gas development will create approximately 662,400 indirect jobs in producing states versus approximately 253,000 indirect jobs in non-producing states.²⁶ Similarly, unconventional oil and gas development is forecast to create up to 968,000 induced jobs in producing states versus 510,000 in non-producing states.²⁷

Additional Job Creation Benefits

As the memorandum previously stated, increased domestically produced supplies of natural gas has reduced current and future estimated natural gas prices. The long-term potential availability of a secure supply of low-cost natural gas is restoring a global competitive advantage to many energy-intensive industries, particularly in manufacturing.²⁸ The international competitiveness benefit of low-cost domestic natural gas is especially beneficial to those industries that utilize natural gas and petroleum as both an energy source and as a feedstock in their manufacturing processes, such as chemical manufacturing.²⁹

may transport, refine and retail oil and natural gas products. However, being an independent does not necessarily connote that it is a small oil and gas produce as defined by SBA.

¹⁹ IHS Shale Gas Contributions Report, *supra* note 13, at 36. The report estimates the shale gas industry cumulatively supported 600,000 jobs in 2010 and will grow to support over 1.6 million by 2035. *Id.*

²⁰ State Economic Contributions Report, *supra* note 15, at 11.

²¹ *Id.* at 10.

²² IHS GLOBAL INSIGHT, THE ECONOMIC AND EMPLOYMENT CONTRIBUTIONS OF UNCONVENTIONAL GAS DEVELOPMENT IN STATE ECONOMIES vi (June 2012) (hereinafter "Unconventional Contributions Report").

²³ State Economic Contributions Report, *supra* note 15, at 2.

²⁴ National Economic Contributions Report, *supra* note 7, at 23.

²⁵ *Id.*

²⁶ State Economic Contributions Report, *supra* note 14, at 11.

²⁷ *Id.*

²⁸ IHS Shale Gas Contributions Report, *supra* note 12, at 4.

²⁹ *Id.* at 25. According to the American Chemistry Council, a 25 percent increase in the supply of ethane – a liquid derived from shale gas – could spur more than 400,000 new jobs inside and outside of the chemical manufacturing industry. AMERICAN

Overall, lower natural gas prices are forecast to increase domestic industrial production by between 2.9 percent and 4.7 percent.³⁰ These lower prices, combined with macroeconomic contributions of oil and gas development, could lead to more than one million new jobs in manufacturing.³¹

Conclusion

The potential economic and fiscal policy benefits of increased oil and natural gas production to the United States economy and small businesses are substantial. Allowing for the increased production of conventional and unconventional oil and gas resources is forecast to reduce our nation's current account deficit, increase the Gross Domestic Product of the United States and enhance economic opportunities for small businesses.

At the same time, while increased domestic oil and natural gas production has many potential benefits, it is not a silver bullet solution to our nation's energy, economic or environmental policy needs. Oil and natural gas resources are ultimately finite and a portion of reduced oil and natural gas prices are predicated on anticipated reductions in future demand as the result of conservation policies.³² In addition, while measures can be taken to reduce the impact of oil and gas production on the environment, there are still environmental tradeoffs associated with oil and natural gas production. For these reasons, the United States should consider increased oil and natural gas production as part of a more comprehensive "all-of-the-above" energy strategy.

CHEMISTRY COUNCIL, SHALE GAS AND NEW PETROCHEMICAL INVESTMENT: BENEFITS FOR THE ECONOMY, JOBS AND MANUFACTURING 1 (March 2011), available at <http://chemistrytoenergy.com/sites/chemistrytoenergy.com/files/ACC-Shale-Report.pdf>.

³⁰ IHS Shale Gas Contributions Report, *supra* note 12, at 36.

³¹ CitiGPS Report, *supra* note 9, at 80.

³² *Id.* at 32.