

Testimony of Mike John
Vice President of Corporate Development & Government Relations
with Chesapeake Energy Corporation
before
The House Subcommittee on Energy and Mineral Resources
Oversight Hearing on "Unconventional Fuels, Part I: Shale Gas Potential"
June 4, 2009

Thank you Mr. Chairman and members of the Committee for the opportunity to discuss the enormous economic and environmental potential of natural gas production from deep shale formations in the United States and around the world. I am Mike John, vice president for Corporate Development and Government Relations for Chesapeake Energy Corporation, the largest independent producer of and most active explorer for clean natural gas in the United States. While our company is based in Oklahoma City, I am based in our West Virginia office, which is focused on the development of what we believe may be one of the world's largest natural gas deposits, underlying parts of West Virginia, Pennsylvania, New York, and other Appalachian states. This high-potential area is called the Marcellus Shale.

I would like to thank, in particular, some of the members of your subcommittee from key areas for Chesapeake – first, Committee Chairman Nick Rahall from my own West Virginia, Congressman Dan Boren from Oklahoma, Congressman John Fleming from Louisiana and the Louisiana portion of the Haynesville Shale and Congressman Louie Gohmert from East Texas and the Texas portion of the Haynesville Shale.

The topic of this hearing is very exciting because shale gas no longer just has “potential.” It is real, and it is a game-changer not only for America's natural gas industry but also potentially for our nation, our economy and our environment! In fact, North American natural gas supply is so plentiful it has been described recently by some experts as a virtual “ocean of natural gas. As such, this shale gas revolution has made greater energy independence, enhanced national security and a significantly cleaner environment, attainable goals today. The real issue is no longer whether there is adequate supply, but rather whether there is adequate demand for this clean-

burning, domestically produced fuel to continue the development of these enormous resources bases.

In fact, Standard & Poor's analysts said earlier this week, "We've really got too much supply. Supply was up about 7% in 2008 relative to 2007, and this is because the industry has finally been able to unlock some of these challenging unconventional resource plays." It is indeed an extraordinary time in our industry.

First, let me begin by providing some background on this highly successful company and industry leader I proudly work for, Chesapeake Energy Corporation. Chesapeake has grown from a start-up just 20 years ago this year to become the largest explorer for and independent producer of U.S. natural gas in the nation. Today, Chesapeake has about 94 rigs currently operating – 80 percent or 76 rigs of which are operating in the "Big 4" shale plays. Amazingly, we are responsible for the drilling of almost one out of every eight natural gas wells being drilled and, through the wells we participate in and other operated wells we collect an estimated 20 percent of all daily drilling information generated in the U.S. today. To give committee members a better sense for the scale of our operations currently, Chesapeake is responsible for more exploration activity in the United States than the five super majors BP, Chevron, ConocoPhillips, ExxonMobil and Shell combined.

We are even more proud that our company has emerged as America's leader in high-potential deep shale gas exploration and production. Chesapeake had been one of the early entrants into the first two major deep shale basins, the Barnett Shale in north central Texas and the Fayetteville Shale in north central Arkansas. In 2008, our company proudly discovered the prolific Haynesville Shale in northwest Louisiana and east Texas in what has the potential to become the largest natural gas field in the United States. In addition, to those three major producing basins we are now ramping up our advanced technology shale drilling program in the Marcellus Shale in the Appalachian Basin.

The key to our success has been the application of cutting-edge geoscience technology to discover new areas like the Haynesville, seismic and petrophysical analysis to define so-called

“sweet spots”, and refined drilling and completion design to enhance economic viability. We then transfer all that knowledge internally to ensure maximum learning curve benefits from other similar deep shale formations.

We also have state-of-the-art technology and resources at Chesapeake that enable us to drill more accurately and precisely, including a Reservoir Technology Center, where we can generate on-site core analysis, and we have our own 3-D seismic visualization center where we can display robust and vivid subsurface images, making it possible for our geologists to pinpoint natural gas prospects miles below the surface. Our company has an unparalleled inventory of more than 20 million acres of 3-D seismic data, as well as U.S. onshore leasehold of about 15 million acres. In short, we believe no single corporate entity has more knowledge about America’s subsurface as it relates to natural gas than Chesapeake. Additionally, it is important to note that over the past decade we have reinvested more than 100 percent of our operating cash flow back into producing domestic natural gas supply. It is independent producers such as Chesapeake that are leading the way in discovering and producing these new domestic and abundant sources of clean natural gas.

We and other industry leaders have known for years about the existence of natural gas in deep shale formations. Unfortunately, we did not know how to economically extract the gas in commercial quantities from this very hard, non-porous and low-permeability sedimentary rock.

And then along came the Barnett Shale in the Dallas-Fort Worth area of Texas.

George Mitchell pioneered the Barnett Shale play starting in the 1980s, but after combining hydraulic fracturing with horizontal drilling techniques while natural gas prices rose off their lows the play took off in 2003, and today, is the most prolific producing natural gas field in the country.

I have included a map of the major deep shale gas plays in your packet. You will see that shale gas is found across much of the United States, but primarily throughout the eastern, southern and west-central part of the country within major sedimentary basins. Chesapeake believes there are four major shale gas reservoirs today – the Barnett Shale, the Fayetteville Shale in Arkansas, the

Haynesville Shale in Louisiana and Texas, and the Marcellus Shale in the Appalachian region, including West Virginia, Pennsylvania and New York, as well as possibly parts of other contiguous states. We have either a top one or two position in each of these high-potential basins.

It is also interesting and telling to note that major and international companies like ExxonMobil, BP and StatOil Hydro are now recognizing the enormous potential of shale resource plays throughout North America, and are starting to refocus their capital investment into the United States in the very same shale projects we've introduced above. For instance, our company has major joint ventures with BP in the Fayetteville Shale in Arkansas and StatOil, a major international player based in Norway, in the Marcellus Shale.

We believe the potential from these four major shale basins is enormous and believe that, depending on price signals and supportive federal policies, that shale gas production could increase four-fold from an estimated 7 to 8 billion cubic feet (BCF) of gas per day in 2009 to a level approaching 30 BCF per day, exclusively from these four major deep shale basins in 2020. Putting these production figures in context they would provide virtually 50% of all U.S. natural gas production from a source that was virtually nonexistent in the past 10 years!

As mentioned, this shale gas production revolution is due to key well design and completion technique advances, primarily horizontal drilling and hydraulic fracturing.

First, horizontal drilling – while not a new process – has been greatly improved, and is the process of drilling vertically and then deviating the well bore at an “entry point” to drill horizontally, in some case to up to a mile away. Modern horizontal drilling can make a near 90-degree turn with the drillbit which allows much increased exposure of the drillbit to the “sweet spot” of a geologic formation and the ability to extract much greater quantities of natural gas than a vertical well. In addition, it provides a much more environmentally friendly technique because the number of surface locations is dramatically reduced, thus minimizing the surface footprint, which allows us to safely drill in urban areas such as Fort Worth, Texas, near

Shreveport, Louisiana and in other well-populated areas where surface locations and surface disturbances want to be kept to a minimum.

Second, although somewhat controversial of late, hydraulic fracturing, or “fracking”, has been utilized since the 1940s but is now used on nearly all producing natural gas wells drilled today. Performed once a well has been drilled, this process creates fissures in very tight shale formations deep underground, many thousands of feet below the surface and fresh water aquifers. Water and sand and “proppants” are pumped down the well bore at high pressure to fracture the rock, so natural gas will flow into the wellbore. In addition to these primary elements a small percentage of other additives are used in fracturing fluids to protect target formations and increase recoveries. It is very important to reiterate that these deep shale formations exist thousands of feet below the land surface and are separated from freshwater supplies by layers of steel casing, protected by concrete barriers as well as millions of tons of hard, dense solid rock geologic formations.

On that issue, which has been a subject of some concern to those not familiar with this industry practice, I have provided all members of the Committee in their packets with a copy of a fact sheet we use to inform and educate the public about hydraulic fracturing, including a list of common compounds found in fracturing fluids. Education is the key to addressing and allaying anxieties of all our stakeholders – including you – and we want to set a high standard for environmental stewardship and community protection.

In the end, very creative and hard-working scientists worked to “crack the code” to produce natural gas from the Barnett Shale, and fortunately, the process actually is becoming more “manufacturing” of natural gas than “exploring and producing” for it. In other words, this has become a safer, lower-risk, lower-cost process. Rapid progress can be made when you find great rock and apply great science to it

Independent supply studies are confirming the results that industry is proving on the ground. The much acclaimed Navigant study, released in July 2008 reflects the great abundance of the North American supply resource base. This chart, which is in your packet, reflects that, even before the

Haynesville and Marcellus is developed sufficiently to add their massive reserve content, that U.S. natural gas reserves are sufficient to provide approximately 120 years of reliable supplies at current production levels or can be scaled up dramatically with supportive federal policy. .

Finally, another independent study to be issued later this month by the Colorado School of Mines' Potential Gas Committee is projected to show another significant growth spurt caused by new deep shale gas discoveries.

To conclude here, I want to acknowledge that the Energy Information Administration, or EIA, plays a major role in providing information about overall energy statistics and forecasts. They provide an invaluable resource. Historically, EIA's estimate of the overall U.S. natural gas resource has been consistent with the PGC study, arriving in 2006 at a resource base that would last 82 years at that year's production levels. However, EIA's forecasts of actual production have been consistently outdistanced by industry performance especially in the unconventional supply area.

Every year, from 1998 through 2008, EIA reflected the history of unconventional supply increasing on a very steep slope, with projections by EIA or a flattening of the supply curve. It has not done so. Instead between 2005 and 2008, we have added secure, onshore, domestic production of natural gas that exceeds the energy content of all the oil we import from Saudi Arabia. EIA is coming around – in their 2009 estimate, they show domestic unconventional supply at much higher levels, and show it displacing most of the imported liquefied natural gas (LNG) they used to think we would be relying on. We appreciate their recognition of our industry advancements.

It is also imperative that I share with this Committee that challenges exist for our industry and those who we must co-exist where we produce natural gas. As some of you know, today, we are drilling more frequently in non-traditional but potentially prolific environments, including challenging topographic environments and more urban settings.

In areas where there is a lack of infrastructure and an existing workforce, we complement experienced workers who are brought in from traditional producing areas with focused recruiting and training programs, and, as in our Fayetteville Shale training facility provide housing for employees. The success formula in all areas is consistent, import skilled and highly experienced workers while developing training programs to recruit local team members, and collaborate with local community leaders to develop best practices and procedures to minimize the temporary inconvenience caused by our drilling and completion operations.

The long-term benefits; high-quality job creation, royalty disbursements to mineral owners in the area, taxes paid on products and services purchased in the area and the creation of new businesses that provide services to our industry are all economic stimulators that provide a windfall profit in new resource rich areas.

These are all vital to being a responsible corporate citizen, and we take the responsibility very seriously and hold our operations to the highest standards.

To be even more specific, in today's challenging economy, it is instructive to quantify for the Committee the projected economic benefits and high-paying jobs provided by the natural gas industry. The average rig provides an estimated 80 direct and indirect jobs, as well as the aforesaid royalty payments, various tax payments, and infusion of significant capital investments in these key areas of exploration activity.

In fact, in two of the areas where deep shale drilling is currently being conducted, northwest Louisiana and east Texas, substantial economic development, significant tax revenues and high job creation is resulting from the current high-tech exploration boom. Similar job creation and royalty-payment disbursement is occurring today in Arkansas in the Fayetteville Shale as well. These two areas in particular have been shining stars in a otherwise very bleak economic picture throughout the country.

I am proud to say, as a native West Virginian, that I expect the next area to benefit from this intersection of capital, advanced technology, and natural gas reserve recovery will be here at

home in Appalachia including West Virginia, Pennsylvania, and New York. In fact, as I mentioned previously it would not surprise me to see the Marcellus Shale underlying that area grow into the most prolific basin of all the four major shale basins.

And today, for you as policy makers, as Congress strives to deal with issues of climate change, national security and energy policy, now abundant, American, clean natural gas stands ready to be a low-carbon affordable answer that is scalable and ready to heed the call to reduce CO2 emissions and respond to climate change concerns. Chesapeake and I believe natural gas is the right fuel, and today is the right time for its increased usage.

As many of you know, but I will reiterate here today, natural gas provides many environmental benefits to alternative fuels. Notably, as a fuel for natural gas vehicles (NGVs), natural gas emits approximately 30 percent less carbon dioxide and up to 90 percent fewer pollutants than gasoline. With gasoline prices beginning to escalate once again and our nation searching for a way to save our domestic automobile industry, we are excited to share with the Committee that natural gas can provide an immediate low-cost solution to higher gasoline prices and an environmental answer for America's large trucks, buses, and SUVs.

It would be appropriate for me right now to take this opportunity to thank chief co-sponsor Congressman Dan Boren, on the Committee today, who – along with Congressional leader John Larson – together have introduced important and supportive NGV legislation that has the potential to increase the domestic market for a cleaner, lower-emitting automobile. I am hopeful all of you on the committee today will consider supporting H.R. 1835 if you have not done so already.

In this country and around the world there is great debate about how to respond to global warming and the impact that greenhouse gas emissions have in increasing atmospheric temperatures around the world. I would be remiss if I did not remind the panel that a modern combined-cycle natural gas power plant is second only to a nuclear plant as the cleanest source of electrical generation. And the exciting new reality is that due to advanced drilling and

completion technologies the U.S. has an enormous domestic natural gas resource base to support growth in existing power generation uses as well as use as a transportation fuel.

As I close today, I would like to advise the panel that with supportive federal policy, natural gas can help reduce OPEC's financial stranglehold on the United States, reduce the U.S. trade deficit and enhance national security. More than 98 percent of the natural gas we use in the United States is produced in North America – as opposed to the more than 65 percent of oil we import from foreign countries – and our natural gas distributed through a highly integrated pipeline network that delivers natural gas everyday to about 64 million U.S. homes and businesses. Furthermore, 33 states produce natural gas, broadly distributing the benefits of using this cleaner fuel.

While the coal industry has referred to the United States as the “Saudi Arabia of coal”, we believe the U.S. should now be referred to as the “Saudi Arabia of natural gas.” The new bottom line: The enormous natural gas resource base discoveries provide another, and in our mind the most attractive opportunities in decades to expand the use of this clean premium U.S. fuel in all arenas where the benefits of burning a cleaner, lower cost, dependable indigenous fuel can enhance the quality of life for all Americans.

Thank you, Mr. Chairman and members of the Committee, and I look forward to answering any questions.