



Harris Group Inc.

Natural Gas - Real or Illusion?

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Introduction

It is almost impossible to extract consensus on natural gas supply. It was only a few years ago, after all, that the experts in the natural gas industry were projecting a huge decline in domestic production, as existing production basins were all in decline and no new conventional reserves were being discovered. The only solution that could save the industry, they said, was the importing of liquefied natural gas (LNG). But then, almost overnight, these same experts that projected the demise of the domestic natural gas industry began to announce that the U.S. was awash in natural gas. This hype has even grown beyond the industry experts and followers, and has overflowed to debate on our airwaves.

It's true that new natural gas reserves, locked in tight shale rock formations, have made an appearance. It's been known for decades that these formations contained huge volumes of natural gas. The problem has always been how to economically unlock and extract this gas. The secret to this challenge was solved through technological advancements in drilling, particularly horizontal drilling capabilities and improved hydraulic fracturing (fracing) techniques. These technological advancements were tested, proven, and improved in the Barnett Shale formations of North Texas, which now produce 2000 million (2 billion) standard cubic feet per day. There are now no less than six new shale formations that are being tapped, using many of the lessons learned from the Barnett Shale development.

Gas Supply Projections

Given the lack of consensus, can we find our way through the hype to determine what's real and what's illusion? As an indication of how far the experts have gone out on a limb, here are some quotes from a few fairly respected organizations, along with some from self-promoting experts, describing the current natural gas supply:

- A Penn State geologist recently said: “the natural gas in the formation (Marcellus) is the equivalent of four times the amount of U.S. oil reserves.”
- The Energy Information Administration (EIA) projects we have 2,000 trillion cubic feet of natural gas reserves, and 100 years of supply at current demand.
- A recent report by the Colorado School of Mines projects that the U.S. now holds 1,800 trillion cubic feet of natural gas.
- According to BP’s Statistical Review of World Energy in 2008, proven gas reserves reached more than 6,500 trillion cubic feet, enough reserves in place to provide the equivalent of 60 years’ consumption at current rates.
- BP Executive Tony Hayward, in a speech from October 8, 2009, stated: “the U.S. may be sitting on between 50 and 100 years’ worth of recoverable natural gas.”
- The Canadian Society for Unconventional Gas estimates that there is as much as 500 trillion cubic feet of natural gas in Canada’s Horn River Basin.
- The majority of industry analysts believe that shale and other unconventional natural gas formations will satisfy market needs in the U.S. and Canada.
- Royal Dutch Shell’s CEO said recently that gas will make up roughly half of its total production by the year 2012.
- Chesapeake Energy Corp. is the largest natural gas drilling corporation in the U.S. The CEO, Aubrey McClenden, said Chesapeake will produce 5 trillion cubic feet equivalent of natural gas a year for the next several years, while finding an additional 3 trillion cubic feet each year.

So what does all this really mean? Initially, these wonderfully exciting technological breakthroughs led to a glut of natural gas and a collapse in short-term prices. This collapse in prices subsequently led to a pull back in drilling activity that trickled down to all aspects of the business. However, the long term outlook for the natural gas market looks very promising, as will be discussed out in the following sections.

Advantages

Natural gas is home grown. I’m sure we’ve all seen the advertisements and interviews by T. Boone Pickens. However one feels about Mr. Pickens as an individual, his message is clear: *we produce 80% of the natural gas we use in this country, and we import over 60% of the oil we use from foreign sources.* Why would we not take advantage of this resource? It’s not important whether you consider it a “bridge” fuel source or a long-term energy solution. It’s here, and it’s available. Most industry experts now believe we have between 50 and 100 years of recoverable natural gas supply at current consumption rates.

Natural gas is the cleanest fossil fuel that is economically recoverable. Natural gas has the greatest potential of any hydrocarbon based fuel to provide the largest carbon emission reduction at the lowest cost, using available technology. Natural gas combustion produces 60% less CO₂ than coal per kilowatt hour. BP experts have calculated that as much as 30% of the carbon dioxide reductions targeted under the Waxman-Markey bill could be delivered by expanded natural gas use.

The U.S. and Canada have roughly 38,000 miles of gas gathering and 350,000 miles of gas transmission pipeline in place. This is a huge infrastructure. We know how to build, maintain, and operate natural gas infrastructures.

Natural gas is the most versatile of all the hydrocarbon based fuels. It can be used for heating, power generation, industrial, and transportation without complex processes.

Trends

In North Carolina, Progress Energy recently made the decision to shift to natural gas fired power generation in the face of state requirements to cut the utility's sulfur dioxide emissions in half by 2013. Tampa Energy recently transformed its Gannon Station into a natural gas fired unit at a cost of \$750 million. In early 2009, developers of the Highwood Generating Station near Great Falls, Montana dropped plans to burn coal and chose natural gas for a new plant. Portland General Electric is proposing to build two new natural gas plants. Gas turbine driven power generators are being utilized around the Country to back up the numerous wind turbine power generating facilities when the wind doesn't cooperate; so there's even a place for gas powered generation in the renewables mix.

Natural gas has been used as a transportation fuel for decades. The problem with growth has been public acceptance and convenience. During a recent meeting of the Western Governors' Association, the members called upon Congress to make it a priority to pass legislation that would include incentives for development and use of natural gas vehicles (NGV's) and natural gas infrastructure. The Dallas Area Regional Transportation (DART) Board voted in late 2009 to solicit bids for nearly 600 new natural gas- powered buses, ending a yearlong debate over whether the new fleet should be natural gas or diesel fueled. This trend seems to be catching on around the Country. Fleet use of natural gas fuel will be the first step in acceptance. A much bigger hurdle will be acceptance by commuters. Until natural gas fueling can match the convenience provided by the self service gasoline station, it will struggle to be the fuel of choice.

Drivers

So what's going to drive the continued use of natural gas and potential expanded use? The most obvious driver is the positive outlook for readily available, economically priced natural gas supplies. This means that the market has to find some way to stabilize prices within a reasonable range and stop the wild swings. The power market, which currently uses over 25% of the natural gas consumed, must get comfortable with the fact that the huge price swings can be minimized, and a reasonably priced abundant product can be delivered.

Electric power generation is the single biggest consumer of fossil fuels. King Coal has had a lock on electric power generation for over 100 years. To break this lock, the public must also be convinced that natural gas is a viable alternative to coal for power generation. There is a lot of money being spent by special interest groups to paint an ugly picture of all parts of the coal industry, from mining to emissions. If this lobbying effort is effective, the natural gas industry stands to benefit from the effort, since it is the only immediately available cost effective alternative to coal fired power generation.

Another significant driver in the growth of natural gas consumption is pending carbon reduction legislation. Natural gas fired power generator can lower carbon emissions from 50-80% per Kilowatt hour over coal fired power generation. The current climate change legislation pending in Congress is strongly tilted to clean coal technologies. The natural gas industry has been slow to recognize and respond to this powerful lobbying effort by the coal industry. They have only recently awakened to what's happening in Washington relative to Greenhouse Gas (GHG) reduction legislation. Several Senators and Congressman from gas producing States have initiated plans to make natural gas power generation a part of the overall climate change legislation. If they are successful in getting natural gas into future climate change legislation, the industry should see a significant increase in demand for natural gas generated electricity.

Summary

The Energy Information Association (EIA) has forecasted that natural gas demand will grow from 101.9 quad BTU's to 113.6 quad BTU's by 2030. This may not seem like a huge increase, but it is equivalent to adding the total natural gas production from another Texas to the current domestic production. One can therefore understand the caution major energy users, including electric power generators and transportation, have had toward fuel switching in the past. But now the whole industry is being looked at in a new light. As recently as 1990, the EIA published data showed domestic reserves at 1,172 trillion cubic feet (tcf), a 50 year supply and we're already 20 years into the 50 year term. Not necessarily a great outlook. The most recent estimates (2009) put the reserves at 2,074 tcf. At current consumption rates, these latest reserve estimates equate

to approximately 100 years of supply. This obviously leaves room for increased use of natural gas. Natural gas has gone from a potential bridge fuel to a domestic bonanza almost overnight. This 77% increase in reserves from 1990 to the present is based on huge advances in drilling and completion technologies, and we're continuing to make improvements in these technologies. The United States is now the largest natural gas producing country in the world - real, not illusion. The future of natural gas looks brighter than ever.

About the Author:

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