

## **Energy Consultant: Natural Gas Is Abundant, Clean & Cheap**

MARK WILLIAMS, AP Energy Writer

An unlikely source of energy has emerged to meet international demands that the United States do more to fight global warming: It's cleaner than coal, cheaper than oil and a 90-year supply is under our feet.

It's natural gas, the same fossil fuel that was in such short supply a decade ago that it was deemed unreliable. It's now being uncovered at such a rapid pace that its price is near a seven-year low. Long used to heat half the nation's homes, it's becoming the fuel of choice when building new power plants. Someday, it may win wider acceptance as a replacement for gasoline in our cars and trucks.

Natural gas' abundance and low price come as governments around the world debate how to curtail carbon dioxide and other pollution that contribute to global warming. The likely outcome is a tax on companies that spew excessive greenhouse gases. Utilities and other companies see natural gas as a way to lower emissions - and their costs. Yet politicians aren't stumping for it.

In June, President Barack Obama lumped natural gas with oil and coal as energy sources the nation must move away from. He touts alternative sources - solar, wind and biofuels derived from corn and other plants. In Congress, the energy debate has focused on finding cleaner coal and saving thousands of mining jobs from West Virginia to Wyoming.

Utilities in the U.S. aren't waiting for Washington to jump on the gas bandwagon. Looming climate legislation has altered the calculus that they use to determine the cheapest way to deliver power. Coal may still be cheaper, but natural gas emits half as much carbon when burned to generate the same amount of electricity.

Today, about 27 percent of the nation's carbon dioxide emissions come from coal-fired power plants, which generate 44 percent of the electricity used in the U.S. Just under 25 percent of power comes from burning natural gas, more than double its share a decade ago but still with room to grow.

But the fuel has to be plentiful and its price stable - and that has not always been the case with natural gas. In the 1990s, factories that wanted to burn gas instead of coal had to install equipment that did both because the gas supply was uncertain and wild price swings were common. In some states, because of feared shortages, homebuilders were told new gas hookups were banned.

It's a different story today. Energy experts believe that the huge volume of supply now will ease price swings and supply worries.

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Gas now trades on futures markets for about \$5.50 per 1,000 cubic feet. While that's up from a recent low of \$2.41 in September as the recession reduced demand and storage caverns filled to overflowing, it's less than half what it was in the summer of 2008 when oil prices surged close to \$150 a barrel.

Oil and gas prices trends have since diverged, due to the recession and the growing realization of just how much gas has been discovered in the last three years. That's thanks to the introduction of horizontal drilling technology that has unlocked stunning amounts of gas in what were before off-limits shale formations. Estimates of total gas reserves have jumped 58 percent from 2004 to 2008, giving the U.S. a 90-year supply at the current usage rate of about 23 trillion cubic feet per year.

The only question is whether enough gas can be delivered at affordable enough prices for these trends to accelerate.

The world's largest oil company, Exxon Mobil Corp., gave its answer last Monday when it announced a \$30 billion deal to acquire XTO Energy Inc. The move will make it the country's No. 1 producer of natural gas.

Exxon expects to be able to dramatically boost natural gas sales to electric utilities. In fact, CEO Rex Tillerson says that's why the deal is such a smart investment.

Tillerson says he sees demand for natural gas growing 50 percent by 2030, much of it for electricity generation and running factories. Decisions being made by executives at power companies lend credence to that forecast.

Consider Progress Energy Inc., which scrapped a \$2 billion plan this month to add scrubbers needed to reduce sulfur emissions at 4 older coal-fired power plants in North Carolina. Instead, it will phase out those plants and redirect a portion of those funds toward cleaner burning gas-fired plants.

Lloyd Yates, CEO of Progress Energy Carolina, says planners were 99 percent certain that retrofitting plants made sense when they began a review late last year. But then gas prices began falling and the recession prompted gas-turbine makers to slash prices just as global warming pressures intensified.

"Everyone saw it pretty quickly," he says. Out went coal, in comes gas. "The environmental component of coal is where we see instability."

Nevada power company NV Energy Inc. canceled plans for a \$5 billion coal-fired plant early this year. That came after its homestate senator, Majority Leader Harry Reid, made it clear he would fight to block its approval, and executives' fears mounted about the costs of meeting future environmental rules.

"It was obvious to us that Congress or the EPA or both were going to act to reduce carbon emissions," said CEO Michael Yackira, whose utility already gets two-thirds of its electricity from gas-fired units. "Without understanding the economic ramifications, it would have been foolish for us to go forward."

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Even with an expected jump in demand from utilities, gas prices won't rise much beyond \$6.50 per 1,000 cubic feet for years to come, says Ken Medlock, an energy fellow at the James A. Baker III Institute for Public Policy at Rice University in Houston. That tracks an Energy Department estimate made last week.

Such forecasts are based in part on a belief that the recent spurt in gas discoveries may only be the start of a golden age for gas drillers - one that creates wealth that rivals the so-called Gusher Age of the early 20th century, when strikes in Texas created a new class of oil barons.

XTO, the company that Exxon is buying, was one of the pioneers in developing new drilling technologies that allow a single well to descend 9,000 feet and then bore horizontally through shale formations up to 1½ miles away. Water, sand and chemical additives are pumped through these pipes to unlock trillions of cubic feet of natural gas that until recently had been judged unobtainable.

Even with the big increases in reserves they were logging, expansion plans by XTO and its rivals were limited by the debt they took on to finance these projects that can cost as much as \$3 million apiece.

Under Exxon, which earned \$45.2 billion last year, that barrier has been obliterated.

The wells still capture only about a quarter of the gas locked in the shale formations. Future improvements could double that recovery rate. Bottom line: this new source of gas supply in Texas, Louisiana, Pennsylvania, North Dakota, New York and other states holds out the promise of as much as 2,000 trillion cubic feet of supplies. It is estimated that the U.S. sits on 83 percent more recoverable natural gas than was thought in 1990.

"The question now is how does this change the energy discussion in the U.S. and by how much?" says Daniel Yergin, a Pulitzer Prize winning author and chairman of IHS CERA, an energy consultancy. "This is domestic energy ... it's low carbon, it's low cost and it's abundant. When you add it up, it's revolutionary."

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