

# How cheap, abundant natural gas is pushing every other power source to the sidelines

**Jonathan Fahey, Associated Press, 10-14-10**

NEW YORK — By unlocking decades' worth of natural-gas deposits deep underground across the United States, drillers have ensured that natural gas will be cheap and plentiful for the foreseeable future. It's a reversal from a few years ago that is transforming the energy industry.

The sudden abundance of natural gas has been a boon to homeowners who use it for heat, local economies in gas-rich regions, manufacturers that use it to power factories and companies that rely on it as a raw material for plastic, carpet and other everyday products. But it has upended the ambitious growth plans of companies that produce power from wind, nuclear energy and coal. Those plans were based on the assumption that supplies of natural gas would be tight, and prices high.

Billions of dollars' worth of plans to build wind farms and nuclear reactors have been delayed or scuttled, including Constellation Energy's Calvert Cliffs nuclear project in Maryland. The company signaled this week it was in peril because of higher-than-expected financing costs.

And coal power, already struggling under tighter environmental regulations, is now under even more pressure. Natural gas emits fewer dangerous chemicals and about half as much carbon dioxide as coal.

The new natural gas discoveries, mostly beneath states in the East, South and Midwest, have kept prices remarkably low, even as demand has begun to come back since the end of the recession.

"We once thought we could face gas shortages and (electricity) brownouts. Now we are facing an enormous oversupply of natural gas," said Fadel Gheit, senior oil and gas analyst at Oppenheimer and Co. "We have not scratched the surface of potential of gas in the U.S. and across the world."

The U.S. uses natural gas to produce 21 percent of its electricity. Coal is the dominant fuel, accounting for 48 percent of the electricity mix. By 2015 natural gas is predicted to reach 25 percent while coal is expected to fall to 44 percent.

In the middle of the last decade, natural gas looked to be in short supply. Production in the U.S. was slowing, imports from Canada were rising and plans for importing liquefied natural gas from the Middle East and elsewhere were drawn up.

Natural gas, which had traded at about \$2 per 1,000 cubic feet in the 1990s, hit nearly \$15 in 2005. It is now about \$3.50, driven lower by reduced industrial power demand and rising production by drillers who are learning to make a profit from shale gas at ever lower prices.

Starting in about 2006, after decades of work, natural gas drillers like Devon Energy, EOG Resources and XTO Energy, now owned by ExxonMobil, perfected methods first tried in 1981 that now allow them to cheaply drill down and then horizontally into gas trapped in formations of shale never before thought accessible.

To release the trapped gas, drillers inject a slurry of water, sand and hazardous chemicals deep into the ground to break up rock and create small escape channels, a process known as hydraulic fracturing, or "fracking."

There is a fear that fluids or wastewater from fracking could contaminate drinking water supplies. Congress has asked the Environmental Protection Agency to study the issue.

But in just a few years, a number of shale gas fields around the country are suddenly producing gas, including the Barnett field in Texas, the Fayetteville field in Arkansas, the Haynesville field in Louisiana and the massive Marcellus field that stretches from Western New York through Pennsylvania, Eastern Ohio and West Virginia.

While these developments are almost certain to boost U.S. gas production for years to come, they will have little effect on imports of foreign oil, at least in the short term. There are proposals to use more natural gas as a transportation fuel, but it is now used mainly to generate electricity, heat homes, and as an industrial feedstock.

A recent study by the Massachusetts Institute of Technology on the future of natural gas found that 80 years' worth of global natural gas consumption could be developed profitably with a gas price of \$4 or below.

Plans for nuclear plants and wind farms were made under the assumption that gas prices would average \$7 to \$9. At that level, electricity prices would be high enough to make wind and nuclear power look affordable. Now many of these projects suddenly look too expensive.

Plans for three dozen new nuclear plants were drawn up in the middle of the last decade, and the nuclear industry hailed what it called a renaissance. Lawmakers, aiming to help stave off high electricity prices, authorized an \$18.5 billion loan guarantee program to help the nuclear industry begin building new plants after two decades of inactivity.

Now almost all of those plans have been delayed or shelved. Even companies that are finalists for federal loan guarantees, NRG Energy and Constellation Energy, announced recently that they have nearly stopped spending on their projects.

Constellation announced last week that it was giving up on its loan guarantee application because the federal government's terms were too restrictive. Analysts say low natural gas prices are making the project uneconomic. NRG chief executive David Crane said he will not pursue the company's two-reactor project in South Texas if gas prices stay low, even if his project is offered a loan guarantee.

"Clearly \$4 gas challenges the economics of just about every other form of electricity generation," says Richard Myers, vice president for policy development at the Nuclear Energy Institute, an industry group. "If you take a snapshot, today, it looks bleak."

The wind industry is also suffering. Antonio Mexia, chief executive of the Portuguese utility EDP, which is the third-largest wind power producer in the world and owner of Houston-based Horizon wind, said in a recent interview that the company plans to reduce wind investments by 75 percent in the U.S. between this year and next.

Nationwide, the wind industry installed enough wind turbines to supply electricity to 2.6 million homes in 2009, a record. This year wind turbine construction will likely fall 40 percent, and next year Mexia predicts that it could fall again, by as much as half. Federal subsidies for renewable energy projects reduce costs by some 30 percent, but that is not enough to help the wind-power industry compete with natural gas these days, he says.

In much of the country it is still cheaper to produce power by burning coal than natural gas, but coal, too, is being threatened. Coal power is becoming more expensive because environmental regulations are forcing

utilities to install new emission control equipment.

With natural gas so cheap, in many cases it will be less expensive to switch to gas than it will to install new emission equipment and continue to burn coal. Dan Eggers, an analyst at Credit Suisse, wrote in a recent report that 60 gigawatts of coal-fired plants — enough to power 35 million homes — will likely be shut down between 2013 and 2017.

Meanwhile, natural gas drillers are spending money and adding jobs. A recent report by Pennsylvania State University, commissioned by a natural gas industry group, predicts that in 2010 drilling in Pennsylvania's shale formations will add 89,000 jobs and inject \$8 billion in spending into the state.

And consumers of natural gas are welcoming low prices. Analysts predict heating bills this winter could be as low or lower than last year and sharply lower than in recent years. Through the first six months of 2010, average residential gas prices were 9 percent lower than for the same period in 2009 and 18 percent lower than in 2008, according to the Energy Information Administration.

While most signs now point to low and stable natural gas prices for years to come, it is not a sure thing.

If regulations tighten or drilling methods are forced to change over environmental concerns, prices could rise.

Also, when the economy recovers to pre-recession strength, gas demand may rise enough to send prices higher, some analysts say.

"We have plenty of gas," says George Shiau, a partner and energy expert at the hedge fund Copia Capital. "We've yet to test what happens when demand spikes."

And though burning natural gas for power is far cleaner than burning coal, burning it still produces carbon dioxide. Alternatively, wind and nuclear power generation are carbon-free.

"We don't want natural gas to become our next big climate problem," said Ashok Gupta, Senior Energy Economist at the Natural Resources Defense Council.