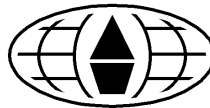




**THE ENERGY-  
ECONOMIC DEVELOPMENT  
CONUNDRUM**

**NEWSLETTER**

**FEATURE ARTICLE**



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## THE ENERGY-ECONOMIC DEVELOPMENT CONUNDRUM

Energy is a big deal in economic development. About a tenth of the world's economy and employment revolves around energy production. The energy sector of the global economy has been in flux in the last decade as energy sources jumped in price.

Economic developers have been busy in the last 3 years with a litany of alternative energy projects. Tamerica's AE database lists 340 announced projects in the USA since July 2008 that collectively represent \$67 billion of investment and 60,000 direct jobs. About two-thirds of the nation's electricity generation is now subject to Renewable Portfolio Standards, directives from regulators that require utilities to purchase power from alternative sources like solar, wind or biomass. The US trails Europe by about a decade in its alternative energy mandates.

Germany was the early adopter of alternatives with feed-in tariffs that guaranteed that utilities would buy power at rates above their own production costs. For wind power, generators were guaranteed the equivalent of 12 cents per kilowatt hour for power they sell to utilities while small rooftop solar generators were guaranteed a price of 45 cents per kilowatt hour for their power sales. And the tariffs guarantee that utilities will buy power from alternative sources for 20 years, albeit at declining prices. The average price for power generated from traditional sources in Germany is about 6 cents per kilowatt hour, which has guaranteed that electricity prices in Germany will increase continuously over the next twenty years.

The policy debate about alternatives, both in Germany and the USA, is clouded by the future prices of hydrocarbon fuels like natural gas and crude oil. Higher prices for fossil fuels favor alternatives, which have no recurring fuel costs. The rapid growth forecast for alternatives was based on an increasing price for hydrocarbons with an implicit assumption that natural gas and crude would remain near price parity on a Btu basis. But natural gas hydrocarbons are now selling for a fraction of the price for hydrocarbons from crude (see Chart).

What is happening? Two factors: a). Demand for crude in China and India and b). Shale gas. Crude prices are increasingly driven by demand in China and India, not by demand in the USA, Europe or Japan. Economic growth and rising standards of living are expected to push crude prices up for at least the next ten years.

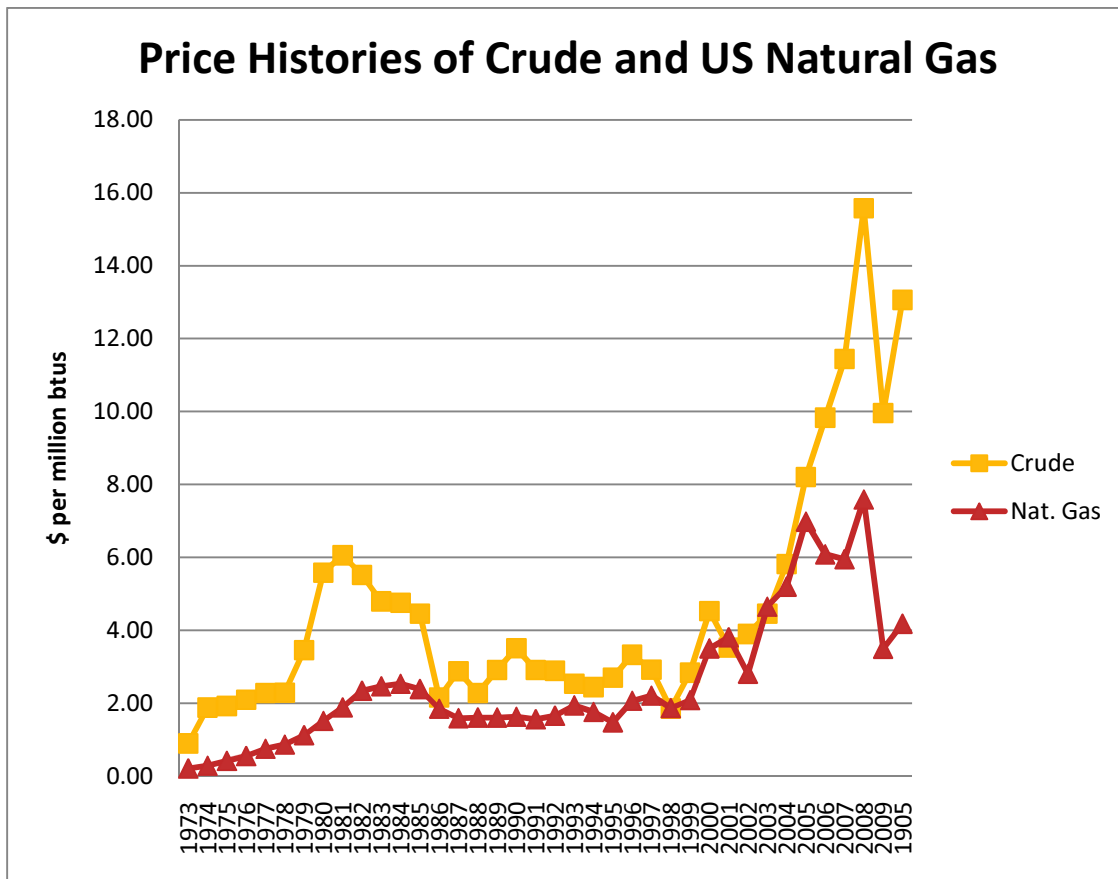
What about shale gas? Most of the world's hydrocarbons, from the Spindletop discovery in 1901 till 2005, have been in sandstone and salt domes. Texas, Oklahoma and Louisiana became epicenters for the nation's fossil fuel production in the early twentieth century because they had the sandstone and salt domes.

But an innovation entered the hydrocarbon picture in the late 1990s that would redefine the energy economy. Entrepreneurs in Oklahoma discovered that you could produce commercial quantities of gas from shale if you combined horizontal drilling with hydraulic fracturing of the



formation, tools that had been around for decades but never applied to shale. The reserves of natural gas exploded as a result.

Shale gas was so minor a factor in US energy production in 2006 that it wasn't even broken out in reports by the Energy Information Agency. In 2007, it accounted for 9 percent of domestic gas production and in 2008 that rose to 13 percent. While figures for 2010 haven't been released as of publication time, shale gas is expected to exceed 20 percent of US natural gas production. The US has such an abundance of gas production and reserves that it is becoming a gas exporter for the first time in 30 years!



Since shale formations are in different regions of the world than sandstone, the exploration and production business shifted with the new technology. The most active regions today for oil and gas drilling include Pennsylvania, West Virginia, and New York, along with states in the Southwest.

Experts see the shale gas shift as a permanent change in energy markets. While crude prices will jump with geopolitical or with economic growth in China and India, natural gas prices are



expected to remain flat because of abundant reserves in the USA. Shale gas technology also portends some abrupt changes ahead for economic developers. Because of the price spread between crude and gas. You'll see more natural gas powered vehicles on the road. The viability of alternative energy projects will encounter higher financial hurdles, since the avoided costs for electricity will be based on abundant and cheaper gas, not on increasingly more expensive crude oil. The locations for petrochemical and polymer industries will also begin to shift, as producers will find it cheaper to convert gas to liquids than to refine crude oil. Stay tuned for future reports on this exciting shift in the energy economy from Tamerica. We're racing to stay on top of it for our clients. Call us today to discuss planning that would put these trends to work for your community.

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