

## Electric Bills to Rise, Owing to Natural-Gas Woes

Policy Errors Push Natural Gas Prices Higher and Supplies Lower

**By William P. Kucewicz**

Many electricity customers in the United States can expect higher utility bills for the rest of this year and probably longer, courtesy of federal policymaking errors.

The immediate problem concerns the cost and availability of natural gas used to generate electricity. Natural gas prices have soared in recent months, and this in turn is driving up electricity prices. According to the Edison Electric Institute, natural gas fueled 9.3% of electricity output last year, down slightly from 9.6% in 1998 and a 10-year average of 9.4% throughout the 1990s. In the two-dozen or so states that have deregulated electric power, the rising costs of natural gas are coming to be reflected in higher utility bills. For those states where public utilities commissions still control electricity rates, consumers can expect price hikes as power companies apply for rate adjustments to cover the increased natural-gas costs.

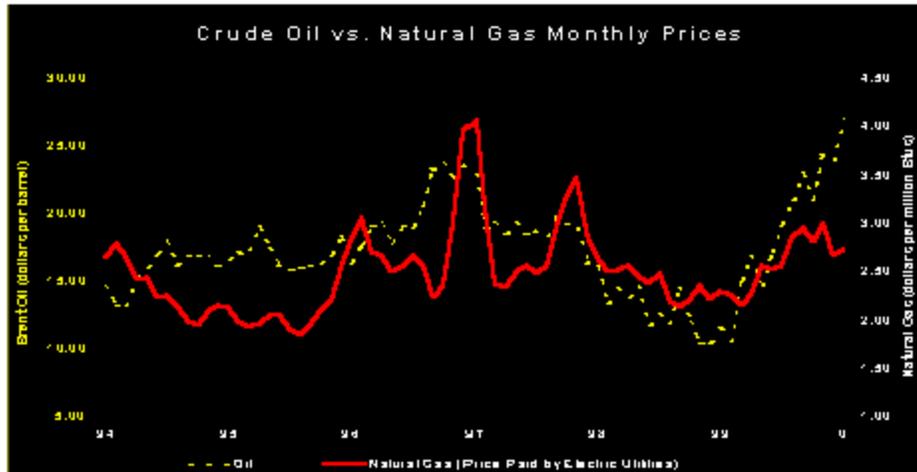
Chances are the situation will get worse before it gets better. Natural gas in storage is considerably below its 1999 level, down almost 22% in May from a year earlier, and additions to stored gas show no signs of making up the difference any time soon. In April and May, net injections of stored gas were off 30% from the same period last year, following a 1999-2000 winter during which withdrawals of stored gas were up 26%. Since spring and summer are the times of year when excess gas is usually put into storage -- anticipating peak winter use -- the sluggish net additions to gas storage portend tight market conditions this coming winter. The likelihood is therefore that electricity prices will remain high and could go higher.

It would not be fair, however, to blame either natural-gas producers or the electric-power industry for this turn of events, for the fault properly lies with U.S. monetary and fiscal policymakers.

Dollar Deflation Hits Energy Prices

### **Dollar Deflation Hits Energy Prices**

In the late 1990s, the U.S. Federal Reserve failed to accommodate a rising demand for the dollar. The resulting liquidity shortage put downward pressure on prices of all sorts but most notably commodity prices. Crude-oil prices, for example, fell by more than half from around \$22.50 a barrel in November 1996 to about \$10.50 at the end of 1998. Natural gas prices in the U.S., which tend to move in rough parallel with oil, dropped by more than 22% during the same period. Wellhead natural gas fell from \$2.50 per million British thermal units (Btus) in November 1996 to \$1.94 by end-1998.



Source: U.S. Department of Energy, Energy Information Administration

These along with other price declines meant that the U.S. had had a bout of deflation. The U.S., as well as most of the world, has had more than enough experience with inflation to be aware of its ill effects on new investment and economic growth. Deflation, by contrast, is a much less understood monetary phenomenon. Thus the dollar price deflation of the late 1990s propelled the U.S. into what might be considered uncharted territory. As it turns out, deflation can have negative effects on investment and business expansion similar to those caused by inflation.

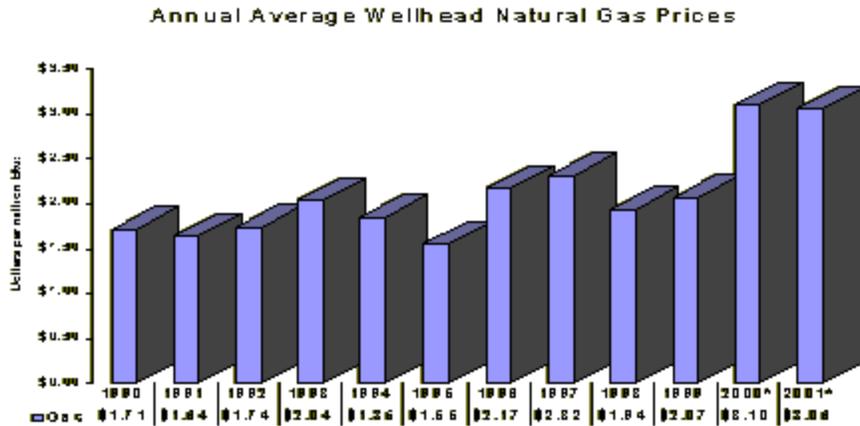
From Iowa farmers to Arab oil sheiks to Texas wildcatters, the tumbling prices for dollar-denominated commodities meant sharp falloffs in both revenues and earnings. For independent producers of natural gas, reduced earnings translated into diminished new investment as rates of return slipped. Even though strong U.S. economic growth would suggest sizable energy demand, the decline in rates of return on energy investment caused by deflating oil and gas prices prompted many investors to depart the sector and funnel their money elsewhere. The attraction of super returns from high-tech investments further wooed financial capital away from the energy sector. In addition, the decline in oil and gas prices made it more difficult for energy companies to retain earnings for reinvestment. All these factors left the U.S. energy sector with insufficient financial capital to explore and develop new finds to meet future demand.

Push eventually came to shove, and the decline in petroleum revenues prompted a host of oil-exporting countries, led by Mexico, to reduce production by 7%, beginning in March 1998. As the flow of petroleum slowed, crude-oil prices began to rebound, nearing and sometimes exceeding \$30 a barrel.

### Gas Prices Emerge from the Doldrums

Natural gas prices in the U.S. also began to rise, in part because fuel switching by large electric-power generators makes oil and gas fungible. After hitting a recent low of \$1.70 per million Btus in March 1999, natural-gas prices at the wellhead rose to \$2.03 by December 1999 and \$2.30 by February 2000, according to U.S. Department of Energy (DOE) data. The department's latest estimates, published this month, see wellhead prices averaging \$2.92 in the second quarter of this year, \$2.81 in third quarter and \$3.09 in the fourth quarter. For this year as a whole, DOE expects

an average wellhead gas price of \$3.10, easing only slightly next year to \$3.06 per million Btus. These prices, respectively, represent increases of 59% and 57% from 1998's average of \$1.95.



\*Prices for 2000 and 2001 are U.S. Department of Energy estimates.

Source: U.S. Department of Energy, Energy Information Administration

As for electric utilities, the prices paid for natural gas delivered for use in power generation rose from \$2.15 in March 1999 to \$2.74 in January 2000, a more than 27% increase. DOE estimates the average gas price paid by electric utilities at \$3.50 in the second quarter of 2000, \$3.38 in the third quarter and \$3.71 in the fourth quarter. DOE expects natural-gas prices paid by electric utilities to average \$3.75 over the course of this year and \$3.60 in 2001 -- increases of 58% and 51%, respectively, compared with 1998's annual average of \$2.38 per million Btus.

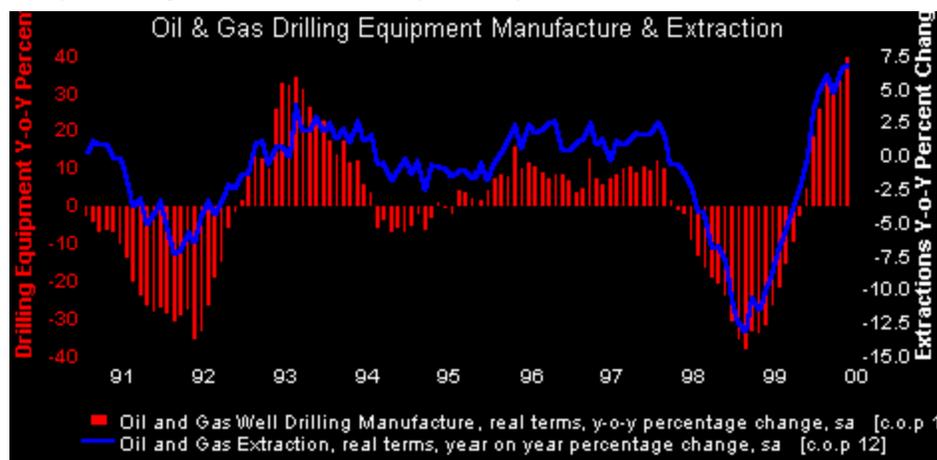
### **Budget Surplus Drains Investment Capital**

The softness in natural gas prices in 1998 through early 1999 seriously dampened new natural-gas exploration and development in the U.S., and the slowdown has now come home to roost. Total proved reserves of dry natural gas fell by 2% in 1998 from a year earlier, bringing to an end a four-year uptrend. Reserve additions in 1998 replaced only 83% of that year's dry natural-gas production. Worse, discoveries of new gas fields in 1998 decreased by 60% from a year earlier in terms of the total volume of gas found; extensions of old fields fell by 23%, and new reservoir discoveries in old fields were off 9%. All told, the amount of new gas discovered in 1998 was equal to just 61% of that year's natural-gas production.

Besides the effect of dollar price deflation, matters were made worse by the burgeoning federal budget surplus, which has had the effect of reducing investment capital at the margin. In fiscal 1998, the federal budget moved into surplus for the first time since 1969. The 1998 surplus of \$69 billion compared with a 1997 deficit of \$22 billion. In 1999, the surplus rose to \$124 billion, and the estimate for fiscal 2000 is \$167 billion -- a figure bound to be revised upward. In fact, new estimates from Washington project a budget surplus (aside from Social Security) of as much as \$2 trillion over the next 10 years.

While budget surpluses are commonly applauded, in terms of overall economic performance, any government surplus not returned to the economy, either by way of tax cuts or net government-securities redemptions, drains funds that would otherwise be used for consumption or investment. Thus, at the margin, the federal budget surpluses have made it harder for industries such as natural gas to attract much-needed investment capital.

Not surprisingly, the number of rotary rigs drilling for natural gas in the U.S. fell from 609 in January 1998 to a recent low of 371 in April 1999, a 39% drop. The manufacture of new oil and gas drilling equipment similarly declined throughout 1998 and into 1999, with production in February 1999 off more than 38% from a year earlier (as the nearby chart depicts, based on this market component of the Industrial Production Index). Likewise, oil and gas extraction (part of the mining component of the Industrial Production Index) was lower in 1998 and into early 1999, with the February 1999 figure down 13% on a year-on-year basis.



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The recent rise in natural-gas prices is prompting a gradual return of financial capital to fund new exploration and development, according to industry experts. The number of drilling rigs looking for natural gas in April of this year, at 609, was back to its level of January 1998, and drilling-equipment manufacture was up 35% from 12 months earlier. Oil and gas extractions, however, showed a gain of less than 6% in April from a year earlier.

Indeed, the pace and scale of the renewed capital inflows into energy, as well as the rate of exploration activity itself, are insufficient to generate an overnight change in the rather pessimistic near- to mid-term outlook for U.S. natural-gas output.

### Drilling Rigs and Expertise in Short Supply

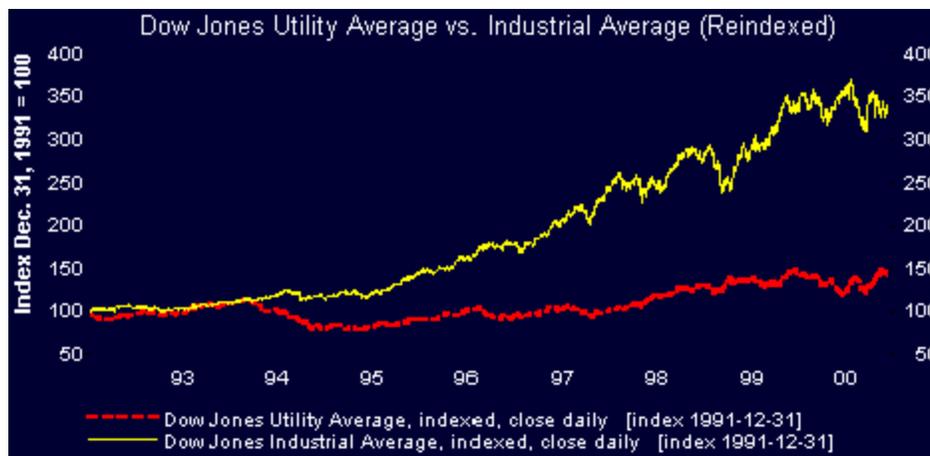
If circumstances weren't already bad enough, natural-gas exploration is being hampered by shortages of drilling rigs and trained personnel. Developers are discovering that rigs are in woefully short supply. It has indeed become so difficult to find spare rigs, industry insiders say, that companies are scouring the country for unused (and often rusting) water-drilling equipment to fill the void. The equipment, matter of fact, often dates to the 1950s and 1960s, indicating the degree of desperation among natural-gas drillers.

Labor attrition has compounded the problem. As energy investment dwindled in the 1990s, jobs in the sector became scarce. Considerable expertise, particularly in exploration and development, was thus lost as workers looked for greener pastures. Now, at a time of increased demand for new exploration and development, U.S. oil and gas developers are encountering a severe shortage of experienced personnel. What's more, very few young people are choosing energy as a career, so there are relatively few new graduates to help meet the rising demand for trained personnel.

The shortages of rigs and expertise are exacerbated by the fact that discoveries of large gas fields in the continental U.S. are increasingly rare. This means, of course, that many more rigs and many more workers are needed to look for the smaller fields that remain. Indeed, most big energy producer, such as Texaco and Exxon, have pulled out of U.S. onshore exploration entirely, because any finds tend to be puny compared with their huge demand for new resources. This leaves independents to explore for the relatively small natural-gas finds left onshore.

While the total amount of onshore natural gas is believed to be considerable, the wells are costly to drill and tend to have relatively low rates of output (though gas production from tight-pocket finds can last a long time). In most cases, onshore gas exploration and development means deeper drilling in hostile geological environments. The result is that finds take larger and cost more -- meaning there is no quick fix to today's gas problem. And as for offshore natural-gas discoveries, efforts are encumbered by the fact that most new exploration is taking place in deep waters.

The conditions in the energy sector have some developers considering so-called "sour gas," though this resource carries considerable risks and costs. Sour gas usually contains hydrogen sulfide (H<sub>2</sub>S) and sometimes carbon dioxide (CO<sub>2</sub>) as well, both of which can be highly corrosive. H<sub>2</sub>S is also a deadly gas, requiring special technology and expertise to remove it before the remaining natural gas can be sold to end-users. Given the costs of removing H<sub>2</sub>S and CO<sub>2</sub> and the resulting shrinkage in volume, sour gas is expensive to produce, yet gas developers are nevertheless weighing this option, given the current supply and price conditions in the natural-gas market.

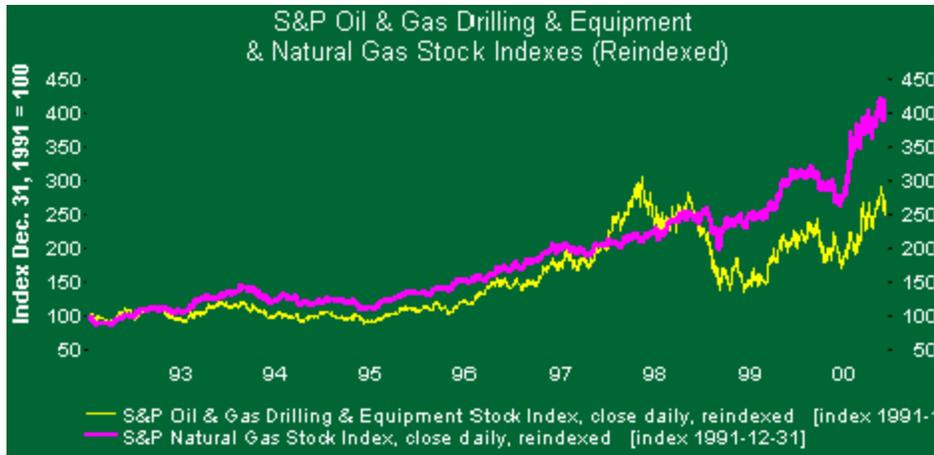


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### Natural Gas Stocks Soar on Wall Street

The problem of natural-gas supply comes at a time of monumental transformation in the \$218 billion U.S. electric-power industry. The Energy Policy Act of 1992 and subsequent amendments

have this once heavily regulated sector transitioning to a free market. Under this new regime, the utilities industry is disaggregating vertically and consolidating horizontally. Instead of a large number of mostly small utilities handling everything -- from electricity production and transmission to distribution to individual end-users -- the industry is moving toward consolidating production and long-distance transmission in the hands of fewer but larger companies. Mergers and acquisitions are also becoming more common. Meanwhile, as electric power is deregulated at the state level, increasing numbers of consumers find they can now choose their own energy provider. Soon, electricity deregulation is expected to extend to 70% of the U.S. population.



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How all this will affect shareholders remains unclear, though among the big winners so far have been the natural-gas stocks. Utilities shares have performed poorly on Wall Street in recent years; since end-1991, the Dow Jones Utility Average has risen a mere 46%, while the broader Dow Jones Industrial Average has advanced 233%. (The two charts immediately above put all the averages on an equal footing by reindexing them, with Dec. 31, 1991 equaling 100.) In the meantime, the share prices of natural gas producers have soared; the Standard & Poor's Natural Gas Stock Index has gained 317% since end-1991. Exploration and drilling shares have done less well, with the S&P Oil and Gas Drilling and Exploration Stock Index up only 163%. Finally, the Dow Jones Electricity Price Indexes and similar power indices have been booming -- going to show that most everything has a silver lining.

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