

A Closer Look at Natural Gas Prices

Although wellhead prices of natural gas have fallen drastically in the past year, consumer prices for gas have not reflected this decrease. The low wellhead prices have had a negative effect in gas-producing states, such as Texas and Louisiana, but have not really benefited states that are net importers of gas, such as California, New York and Illinois. The structure of the natural gas industry may be partially responsible for the discrepancy between wellhead and consumer prices.

The substitution of natural gas for petroleum products could be a way of reducing U.S. dependence on foreign oil. The United States is fairly self-sufficient in natural gas, producing 93 percent of consumption. However, for natural gas to be competitive with oil, consumer prices must correctly represent the supply and demand for natural gas.

Natural Gas Demand

Natural gas wellhead prices reached a 12-year low in mid-1991; however, this price level is not a reflection of low natural gas demand. U.S. gas consumption has shown an increasing trend since 1986. Natural gas is used in four sectors of the economy: residential, commercial, industrial and electric utilities (*Chart 1*). Gas use has increased mainly in the industrial and residential sectors (*Chart 2*). In the residential market, conversions to gas heating in 1990 were the highest since 1982. Although residential gas consumption showed

a decline in 1990 because of the mild winter, 59 percent of all new single-family homes in 1990 were heated by gas, compared with 43 percent in 1985.

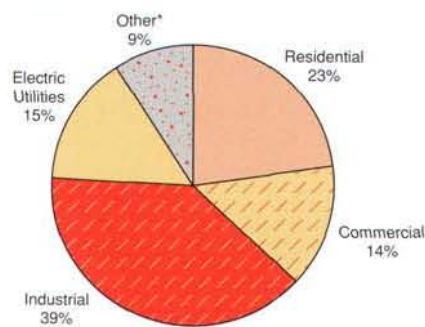
Environmental considerations are also fueling natural gas demand. The passage of the Clean Air Act raises the potential for greater natural gas demand. As a clean-burning fuel, gas is replacing coal in industrial uses and is being considered as a feedstock for motor fuel.

Environmental concerns have also increased natural gas use in Mexico. Mexican imports from the United States are rising, boosting natural gas demand. U.S. natural gas exports to Mexico have more than doubled over the past year and are expected to increase further by the end of 1991.

Natural Gas Supply

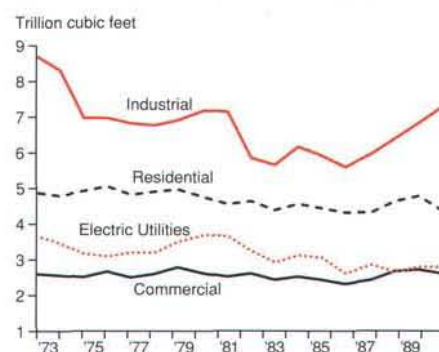
Wellhead prices of natural gas have plummeted because of increased supply of natural gas. The supply of natural gas in 1990 was the highest it has been in the past eight years. Tax incentives for production of coal-seam and tight-sands gas have greatly increased supply from these sources. Canadian exports of gas to the United States also have increased. Canadian natural gas exports to the United States rose 8.1 percent in 1990 and are expected to be even higher in 1991. Mild winters in recent years have contributed to supply by increasing inventories. The U.S.

Chart 1
Natural Gas Consumption
by End Use, 1990



* Other is pipeline fuel and lease and plant fuel.

Chart 2
Natural Gas Consumption
by End-Use Sector



Energy Information Administration reports that gas in storage is at a six-year high.

In addition, production of natural gas is high despite low wellhead prices because smaller producers are reluctant to curtail production. In fields where more than one operator is active, shutting down one's well while others continue producing would lower future output from the shutdown well. This loss occurs because shutting down a well increases pressure in other wells, allowing other producers to draw more gas from the common field. Shutting down a well would also disturb the delicate balance between pressure in the well and the rate of production, possibly reducing overall output or making it more costly. Hence, despite low wellhead prices, natural gas producers hesitate to curtail production sharply.

Market Structure of the Natural Gas Industry

Changes in the structure of the natural gas industry have also contributed to the downward pressure on wellhead prices. Natural gas goes through many channels as it travels from producer to end user. Producers sell their gas or contract with a pipeline company, which transports the gas to local distribution companies (LDCs). The LDCs, in turn, transport and sell the gas to end users. State public utility commissions regulate the number

of LDCs and their rates because LDCs are natural monopolies.

Before deregulation, entry into the pipeline stage was restricted and long-term contracts were the rule in the industry. Long-term contracts and the limited number of pipelines, along with wellhead price regulation, created monopoly power for the pipelines. Low wellhead prices were not passed on to consumers but rather were appropriated as excess profits or dissipated as cost by the pipelines.¹

After decades of regulation, natural gas wellhead prices have been deregulated and entry barriers for pipelines have been relaxed. In 1985, a new policy of *open access* to pipelines emphasized their role as carriers of gas, rather than buyers and sellers of gas. The number of long-term contracts declined substantially with open access. The demise of long-term contracts, along with open access to a limited number of pipelines, led to competition among gas producers to get their gas into the pipeline. This competition has led to more volatile and lower wellhead prices for natural gas.

Consumers Are Not Benefiting

The low wellhead prices that have been detrimental for gas producers have not been passed on completely to consumers. Table 1 shows that gas prices in the electric utility and industrial sectors most closely reflect declines in wellhead prices. For example, a 12-percent decrease in natural gas wellhead prices between 1990:1 and 1991:1 is passed on to industrial customers as a 9-percent decrease and to electric utilities as an 11-percent decrease but only as a 0.5-percent decrease to commercial customers. Price decreases are not passed on to residential customers at all. The 12-percent decrease in wellhead prices is transformed into a 0.4-percent increase in residential prices.

The reason low wellhead prices are not passed through to consum-

Table 1
Change in Natural Gas Prices
by Sector (Percent)

	1989:1-91:1	1990:1-91:1
Wellhead	-9.29	-11.55
City Gate*	-3.93	-5.17
Residential	2.71	.42
Commercial	3.33	-.53
Industrial	-7.83	-8.94
Electric Utilities	-1.62	-10.69

* *City Gate* refers to prices local distribution companies pay for natural gas.

ers may lie in the structure of the natural gas industry. Even with deregulation, the limited number of pipelines and LDCs could be restricting the flow of gas from the wellhead to the consumer.

The price differentials seen in the different sectors using natural gas could arise from the market power of pipelines and LDCs. If the pipelines and LDCs were price discriminating among their customers, they would charge lower prices to customers who were more sensitive to price changes. Industrial users and electric utilities, for example, would get lower prices because they could switch to alternate fuels. On the other hand, the pipelines and LDCs would charge higher prices to customers who were more or less locked-in to natural gas in the short term, such as residential customers. Such behavior seems consistent with price patterns in the natural gas market.

The lower prices charged to industrial users and electric utilities by the LDCs could also stem from competitive pressures. Electrical utilities and industrial users can obtain gas either directly from the pipeline or buy under contract from producers at prices lower than those provided by the LDCs. The LDCs could be subsidizing these customers by charging higher prices to other customers, such as residential users, who do not have access to cheaper gas.

Another factor affecting prices is the cost of delivery. Delivering gas

to residential and commercial users is more expensive than delivering gas to industrial users and electric utilities, increasing the disparity in prices. Furthermore, because LDCs are regulated by state public utility commissions, regulatory lags could occur in the changing of prices to end users.

However, even after accounting for cost differences and regulatory lags, natural gas prices at the users' end are still high. The downward trend in wellhead prices has not been passed on to end users of natural gas. The abundant supply of gas competing to get into the pipeline in the producing states is not competing for customers at the other end of the pipeline in the consuming states. More efficient pass-through of wellhead prices could increase the market share for natural gas and also would enable changes in demand to be more accurately reflected in wellhead prices. Natural gas would then be better able to compete with oil and other energy sources in the end-use market.

—Mine K. Yücel

¹ Brown, Stephen P.A. (1985), "Consumers May Not Benefit from Wellhead Price Controls for Natural Gas," Federal Reserve Bank of Dallas *Economic Review*, July.

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