PIRINC

Telephone: (212) 867-0052

Petroleum Industry Research Foundation, Inc.

122 EAST 42nd STREET

New York, N. Y. 10017

NATURAL GAS SURPLUS: A MATTER OF POLICY

by

John H. Lichtblau
Executive Director

presented to

The Annual Meeting of the
Natural Gas Supply Committee

Houston, Texas

January 31, 1979

Changes come fast and furious in this industry and it's not always easy to keep up with them. Thus, as you all know, the natural gas shortage of the last 6-7 years has suddenly turned into a surplus within the last 6-7 months. We are told by the Administration the surplus will be around for at least several years and that, for the time being, our biggest energy problem is not finding enough gas to meet demand but finding enough markets to absorb the available domestic gas supply.

How did this desirable, if unexpected, reversal come about? Did we find that much more gas in the last year or two? Apparently not. For while the decline in gas production since 1973 levelled off in 1977 contrary to earlier more gloomy forecasts, the underlying long term supply structure has not really improved.

The proved gas reserves estimate for the end of 1978 have not yet been published. But since we consumed about 19 tcf (trillion cubic feet) of domestic gas last year, the reserves surely declined again, for it is highly unlikely that we discovered an equivalent amount of new gas. We have not come even remotely close to such an amount in any of the last 10 years in the lower 48 states. Thus, our "lower-48" gas reserve/production ratio, which has dropped every year since 1968 and was already precariously low in 1977 with reserves equal to only 9.4 years of production, must have dropped still further in 1978, despite a continuation of the upward trend in well drilling of the last several years.

On the demand side, energy conservation was certainly a factor in constraining the growth in our consumption. Nevertheless, total energy demand increased by about 2% last year, with the aggregate of all sectors in which natural gas is used participating in the growth. We may therefore assume that if more natural gas had been made available at prevailing prices it would have found a ready market.

Thus, neither on the supply side nor the demand side of natural gas have market factors changed sufficiently to justify the Administration's perception that the shortage has suddenly turned into a surplus. Yet, the Administration is quite correct in saying that considerably more gas is currently available at existing prices than the market is absorbing. The Administration has put the surplus at about a trillion cubic feet, or about 5% of annual demand. The figure has been disputed in both directions. But there is no doubt that many gas producers are currently operating well below capacity.

Let us briefly examine some of the reasons for this state of affairs. One has been the perception by industry and government since the beginning of the 1970's that domestic gas supplies have entered an irreversible decline phase and that, since supplemental gas supplies, such as imports or synthetics, were not readily available, overall gas demand had to be reduced in a controlled way to avoid uncontrollable shortages. In large part this was done through regulations which set up priority categories of gas customers. Under this policy gas as a boiler fuel was effectively blocked from entering industrial and electric power plant markets and was reduced at a rapid rate in the existing boiler fuel market. At the same

time, some restrictions were put on new connections in the residential/commercial market but most of these were removed in the course of last year or so.

The imposed reductions in demand, together with the significant improvements in energy conservation in the residential and industrial markets, eventually caused a backing up of supplies, due in large part to the inflexibility of bureaucratic rules which customarily trail market changes with a considerable lag.

Another factor was the 15-month debate over a new natural gas policy, culminating in the Act signed last November. The debate discouraged the dedication of incremental gas supplies for both intrastate and interstate markets because of the expectation of higher future interstate prices for new gas than were currently competitively obtainable in the intrastate market and legally permissible in the interstate market. The eventual passage of the Natural Gas Policy Act of 1978 confirmed the correctness of the producers' commercial reactions to these expectations.

These then are the main factors underlying the natural gas surplus that is now so widely debated. It is not due to a sudden resource surplus, nor to a natural market contraction but it is a classic example of a market distortion generated by legislative uncertainty and regulatory ridigity. In the latter aspect it resembles the crude oil surplus at the West Coast and the developing natural gas glut in western Canada.

The U.S. gas surplus is now beginning to be reduced because of the recent changes in legislation and regulations. By next March, given FERC permission, the incentive of the new interstate gas prices can be expected to bring about an increase in the flow of gas from the intrastate to the interstate market.

At the same time, the Secretary of Energy has bravely acknowledged that the long held policy of reducing natural gas supplies to the industrial and electric power sectors makes no sense in light of the existing surplus. Whether it made sense in the past is another matter. Those of us who have been around the energy industry for some time remember the fervent insistence of government energy officials as well as some industry economists for the last 7-8 years, that the use of gas as an industrial or utility boiler fuel was downright sinful because it was a "waste" of a depleting resource. Gas, we were lectured, should be reserved for "priority" consumers and should never be used where other fuels could be substituted.

In 1973 these "wasteful" markets accounted for over 60% of total U.S. gas sales. Between then and 1977 the reduction in sales to these markets was equivalent to 50% of total gas sales to the U.S. residential/commercial sector. Obviously, this was an overcorrection for the perceived shortage which contributed substantially to the glut that began about a year ago.

Since the current gas surplus is likely to be relatively short-lived, as I shall discuss later, we can expect attempts to revive

the now suspended policy of reducing gas sales to industrial and electric utility customers in the not too distant future. In fact, the National Energy Act of 1978 requires the phasing out of gas to these groups of consumers. It may therefore be worthwhile to examine briefly what this policy did or did not accomplish since it came into being about four years ago.

Clearly, when the supply of a vital domestic commodity like natural gas started to decline and no supplemental gas from other sources was available, it made sense to protect those consumers who were not in a position to switch to alternate fuels without substantial expenses and inconveniences. Residential gas users certainly fall into this category, and without some constraint on the sale of gas to non-residential users the continued supply of gas to existing households may have been endangered.

But the logic of a policy which permits the expansion of gas to new homes while phasing it out from existing firm industrial and power plant users is a good bit less clear. Yet, this is exactly what happened, despite some now revoked constraints on new gas connections. In the period 1973-77 nearly 40% of all new homes in the U.S. were fitted with gas heat. All of these homes had ready access to alternate heating fuels. In the colder regions of the country a major alternate is heating oil. In the Sun Belt region it is electricity. (Electricity is of course also available and widely used for space heating in the colder regions but the cost is much higher than either gas or oil heat).

Thus, the principle of treating consumers with alternate fuel capabilities differently from those who had to rely exclusively on gas was enforced very selectively, with residential consumers obviously being given preferential treatment. One potential problem with this treatment is that while a new home has a choice of heating fuel at the time of construction, once the heating system is installed that choice no longer exists, for practical purposes, and it becomes permanently dependent on its fuel source.

Let us now look at some of the results of the reduction in gas sales to the non-residential sectors. If it led to a corresponding increase in the use of coal in these sectors, that could be considered a desirable result, given the large domestic coal potential. If, on the other hand, it caused an increase in oil consumption, that would have to be termed undesirable, since all incremental oil supplies must be imported.

In the electric utility sector the decline in power generation from gas from 1973 to 1977 was accompanied by significant increases in power generation from coal and oil, with coal rising slightly more rapidly than oil. Hence, to some extent the reduction in gas availability appears to have caused a shift to coal. At the same time, a significant part of the reduction was made up by the increased use of oil.

In the industrial market, the phasing out of gas seems to have caused no shift to coal, since coal's share and volume both declined from 1973 to 1977. On the other hand, oil's share and volume rose during this period.

Thus, while the policy of reducing gas sales to the industrial market may well have been justifiable because of the perceived gas shortage, it did not reduce the level of oil imports, nor was it meant to. On the contrary, indirectly, it caused higher oil imports by contributing to the present gas surplus. For, obviously, a higher gas consumption would lower the prevailing level of oil imports.

In view of these facts, the Administration's policy reversal on industrial gas sales is an important and beneficial decision, giving recognition to emerging market changes. It is also a brave decision, since it attacked a sacred cow. However, it did not kill the sacred cow, for the policy reversal is only to apply for the duration of the gas "surplus" according to DOE pronouncements.

How long that surplus will last is of course a matter of speculation. Right now, the Iranian situation could make it of very short duration. If Iranian oil exports remain totally unavailable for another few months an oil shortage can be expected to develop. In that case any fuel capable of displacing oil would have to be mobilized to reduced our need for oil imports. We might therefore see a rapid return of natural gas as a replacement for oil in plants with ready capability to switch to gas. According to a recent survey by the American Gas Association, gas distributors could potentially replace about 700,000 B/D of fuel and distillate oil in the short run through increased sales to industrial customers, provided the required incremental gas supply is available. Increased direct sales by gas producers to industrial and power plants could raise this volume still further.

Looking beyond the short term, can we really expect the U.S. gas supply and demand balance to change essentially from what it was perceived to be until a year ago? Secretary Schlesinger has recently projected that domestic gas production from the lower 48 states will be 18 tcf in 1985. This compares with the original National Energy Plan projection of 16.1 tcf if the previous energy legislation had continued and 17.2 tcf under the Administration's proposed energy policy. The Secretary now believes the supply response to the new gas legislation will be higher than anticipated two years ago. Hence, the updated, more optimistic projection. He may be right. Optimists sometimes are--even in the energy sector. But in 1977 we produced 19.2 tcf of gas and last year probably about the same amount. Optimistically, our supplementary gas sources (imports of LNG, Canadian and Mexican gas, and Alaskan pipeline gas) might amount to 3 tcf by 1985, compared to 1 tcf last year. Thus, our total gas supplies by then would amount to 21 tcf, or about 5% above last year's supplies. Yet, during the same period primary energy demand in gas consuming markets is likely to rise by at least 15%. Hence, even under these really optimistic supply assumptions all available gas will be needed by the early and mid-1980's.

If in anticipation of these developments policy makers now declare that their flexibility is temporary and that within a few years they intend to revert to the policy of phasing out gas sales to industrial and power plants, this will act as a major <u>dis</u>incentive for these consumers to switch from oil to gas now, since they will

have to switch back in a relatively short time. It may be worth pointing out in this context that under normal market conditions the category of gas available to these consumers would in most cases not be significantly lower priced than the type of fuel oil they require.

Of course, where the policy of phasing out of gas increases coal consumption, the policy has a net national benefit and should therefore be encouraged. As we have seen, so far, coal consumption has been very little affected by gas curtailments. The reason, however, is not economics, since on a Btu basis coal now costs significantly less than gas for most utilities and industrial plants. The differential can be expected to rise in the future. What keeps coal consumption from increasing in these markets are environmental regulations and, to a lesser extent, lack of transportation. If we want coal to displace more gas in the industrial markets, we will have to deal with these problems. Otherwise, we are likely to have the same experience in the future that we had in the past, namely that the principal substitute for gas in the industrial markets will be imported oil. Obviously,this is not what our energy policy should aim to achieve.