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THE CASE FOR NATURAL GAS DEREGULATION

INTRODUCTION

When Harry Truman said, "The buck stops here," he meant that from time to time every President has to make gutsy decisions. One gutsy decision Ronald Reagan was expected to make was to decontrol natural gas prices, just as he decontrolled oil prices last year.

There is no doubt that lifting the federal price ceilings on gas would be controversial. This is an election year, and the effects of decontrol would be felt broadly. More than 38 million American households heat with gas, and it accounts for roughly 27 percent of all U.S. energy consumption. Gas is essential to industrial processes ranging from glassmaking to fertilizer production; it is even used to make medicine. Best of all, gas does all this at a bargain price -- and there is the rub. No politician wants to be caught raising prices in an election year, and so it was not long before the President found himself under intense pressure to put off decontrol until after November. While few would acknowledge their positions publicly, many Republican Members of the House and Senate feared that moving to lift the controls would hand the Democrats a tailor-made issue. Their opposition was echoed by the Republican National Committee, where Chairman Richard Richards is said to have expressed particular concern over the loss of marginal Republican seats in the House.

Faced with this broad range of opposition, the President caved in, issuing a statement at the start of this month that said, "it would overload an already heavily laden political agenda" to move on natural gas controls this year. The statement did, however, recognize that lifting the gas price ceilings "remains an essential component of a sound energy policy." That is not surprising because gas is a "premium" fuel. It is relatively non-polluting and its production barely disrupts the environ-

ment. It is easy to transport and use. Although there were fears a few years ago that supplies were running out, experts now agree that domestic reserves are plentiful. The prime attraction of natural gas, though, has been its bargain price. This is where the debate has focused and why the congressional concern surfaced. The trouble is that, to date, the debate has led to more, rather than less confusion over just what the price consequences of gas decontrol actually will be.

If, as opponents contend, decontrol will lead to a sharp increase in the cost of natural gas, then ending the bargain could, as the Administration feared, be political dynamite. Conversely, if this is not the case and controls are allowed to continue, America's efforts to become energy self-sufficient could be crippled. With billions of dollars and America's energy security at stake, it is critical that Congress make the right decision. Ironically, it is a decision its Members thought they already had made.

Many Members of Congress believed they had resolved the question of natural gas price controls with the passage of the Natural Gas Policy Act of 1978 (NGPA). In drafting this legislation, however, they made the fatal mistake of tying phased decontrol to an unrealistically low target. While this may have preserved the politically popular low prices for natural gas, it virtually insured that energy prices would shoot up when all controls are lifted in 1985. As the date for expiration of the controls began drawing near, fears of such a price surge, called a "spike" by insiders, led to a re-opening of the whole issue. For those Members who sat through the months of heated conference committee hearings leading to the enactment of NGPA, the notion of still more debate on the issue in an election year has hardly been appealing. More important, though, was the concern that a new round of hearings could have led to an extension of controls rather than their early demise, as Members yielded to political considerations.

For the newer Members, who came to Congress after NGPA was passed, the problem is slightly different. They find themselves assaulted by advocates on either side of the question, presenting a bewildering array of studies, reports and analyses supporting their point of view. Each of these documents seems to have merit, and yet as likely as not contradicts the conclusions of all the rest. Contributing further to the confusion is the fact that many of the interest groups arguing for or against decontrol appear to be taking positions out of character with what would be expected. For instance, environmental groups largely support gas decontrol while the American Gas Association, lobby for the large interstate pipelines, opposes speeding up the process. Even the independent oil producers, the firms which specialize in searching for new supplies, are split on the issue with a small minority favoring continued federal price ceilings.

Regional conflicts also add to the complexity of decontrol. Although most natural gas is produced in the "sunbelt" states of the west and southwest, much of it is consumed in the "frostbelt" states of the northeast and midwest. Members of Congress from the non-producing states fear that a sudden "fly-up" of gas prices after controls are lifted could lead to vast income transfers from their region to the producing states, exacerbating the already relatively poor economic situation in the northeast and midwest.

Though the fears are real, supporting evidence is shaky. There are widely conflicting estimates of the real cost of decontrol; the projected price tag ranges from \$30 billion to \$160 billion by 1985. These estimates, however, ignore the recent experience with oil decontrol, where the average national price for crude oil actually dropped. Another common failing of such estimates is that they overlook the fact that consumers will seek alternatives to gas if prices rise too sharply. Also, they frequently fail to recognize that transmission costs constitute fully 60 percent of what the gas customer pays and may actually decrease as larger volumes flow through the pipelines.

One problem with estimating the possible price increases is that they would not be distributed evenly across the nation. Unlike oil prices, which were relatively uniform on a regional basis, wide differences in gas prices exist. For instance, the residential consumer in Kansas who pays about \$1.85 for a thousand cubic feet of gas would pay \$4.16 in New Jersey. Similarly, some gas producers with older fields receive as little as \$.17 for the same amount of gas while those with deep gas, produced from wells below 15,000 feet, command as much as \$11.00. Therefore, the magnitude of the increase a customer will experience is, to a degree, based on geographic location.

How much, in fact, will the price go up? A number of factors will play a major role in determining the course of natural gas prices in the event of decontrol. These include: 1) the extent of the domestic resource base; 2) the probable drilling response; and 3) the effect of alternate forms of fuel. To evaluate the relationship of these factors to natural gas prices, however, it is helpful to examine the history of price controls.

HOW IT BEGAN

During the latter part of the 19th century and the first quarter of the twentieth, the natural gas market was free of federal interference. In the 1920s, however, increasing mergers by pipeline companies gave rise to fears that the industry was becoming too concentrated. To remedy this, the Senate in 1929 directed the Federal Trade Commission to examine the gas industry. Its findings, issued in 1935, suggested that concentration was beginning to squeeze out independent producers. At about the same time, midwestern city officials were complaining to Congress that the large pipelines were engaging in discriminatory practices.

Congress responded with the Natural Gas Act of 1938. It extended the jurisdiction of the Federal Power Commission, which originally had been established to regulate the interstate sale of hydroelectric power, to some aspects of the natural gas market. The most important of the Commission's new powers was regulation of the rates that interstate pipelines could charge customers. In broadening the FPC's powers, though, the Act specifically excluded "the production or gathering of natural gas."

Gas production remained outside FPC authority until 1954 when the Supreme Court extended the Commission's jurisdiction in the landmark Phillips v. Wisconsin decision. This case effectively established a two-tiered market for natural gas. One tier, the intrastate market, consisted of gas produced and sold within a single state; this was free of federal interference. The other tier, the interstate market, was subject to federal controls. It soon became evident, however, that the Court gave the Commission an unmanageable task.

At first, the FPC tried to regulate gas prices at the well-head in the same way that they would regulate an electric utility. This sort of ratemaking was ill-suited to the radically different circumstances under which natural gas is bought and sold. For one thing, there is a great variation in the cost of gas wells, even when they are drilled within the same geologic basin. Attempts to apply some uniform formula for rates of return and cost of service under such conditions proved infeasible. Moreover, under conventional utility rate-making procedures, there is no way to make allowances for the capital formation necessary to finance the exploration for new supplies essential to maintaining continuity of service. Finally, the FPC attempt to treat wells on an individual basis created an avalanche of paperwork as producers appealed Commission decisions. In fact, by 1960, a backlog of 3,278 rate cases had developed.

Attempting to simplify the process, the FPC next adopted "area wide rates" for five geographical regions. Within each region, all producers were subject to the same price ceiling. The trouble with this was that raising prices became so difficult that there was a de facto freeze on interstate rates throughout the 1960s. The freeze in turn discouraged development of new supplies while encouraging excess gas consumption. Over time, the federal controls led to a decline in gas reserves earmarked for the interstate market.

There is general agreement that a gas pipeline should maintain reserves roughly equal to 20 times the amount sold each year to ensure continuity of service. On the interstate market, however, the ratio of reserves to production dropped sharply, from 18.9 in 1964, to 8.5 in 1977. Moreover, after peaking at 189 Tcf (trillion cubic feet) in 1967, proved reserves dropped to 92 Tcf by 1977.

On the intrastate market, free from federal controls, it was a very different story. Rather than declining, proved reserves

earmarked for this sector actually increased slightly from 92 Tcf to 115 Tcf. Moreover, although there were some price differences between the interstate and intrastate gas markets, prices on the intrastate market were not so high that they placed an undue burden on consumers.

With reserve ratios dropping and demand rising, shortages on the interstate market were inevitable. By the winter of 1970/71, they became so serious that the FPC ordered some large gas consumers to curtail use. That winter, curtailments equalled 100 billion cubic feet, sparking the Commission to grant producers some modest price increases to encourage new supplies. However, they were too late to reverse the effects of the decade of price controls. The interstate shortage grew, as did the number of curtailments.

By 1977, a crisis was looming, but the warning signals were not perceived. The winter of 1976/77 proved to be one of the coldest in U.S. history. Record low temperatures plagued large sections of the gas-consuming states in the northeast, causing demand for natural gas to skyrocket. Severe shortfalls soon developed, though there actually was a surplus on the intrastate market. To avert severe economic disruption, Congress enacted the Emergency Natural Gas Act authorizing transfers of gas from intrastate supplies to interstate pipelines. While this helped alleviate the immediate problem, it skirted the basic issue: that the shortage had been created by the market imbalances resulting from federal price controls. This Congress tried to address through the Natural Gas Policy Act of 1978.

THE NATURAL GAS POLICY ACT OF 1978

In spite of the harsh lesson of the winter of 1976/77, Congress was still reluctant to face the decontrol issue squarely. This arose in part from concern over the extent of gas reserves and the effect decontrol might have on prices if supplies really were on the verge of exhaustion. However, a deep-seated hostility towards the oil industry was an even more important factor.

Gas decontrol was introduced initially in April 1977 as part of the Carter Administration's omnibus energy bill and enacted in vastly modified form in September 1978. Although touted as a deregulation measure, the NGPA initially increased federal involvement in the gas market by bringing intrastate sales of gas under FPC jurisdiction. It also greatly increased the complexity of federal controls, creating eight primary categories of gas wells and more than thirty subcategories. Finally, it did nothing to eliminate the curtailment policy which had injected so much uncertainty into the natural gas market over the preceding decade.

The intent of the NGPA was to allow the price of regulated gas to rise over several years to a level roughly equal to the world oil price. This was attempted by gradually increasing the

price that domestic gas producers were allowed to charge until it reached a level roughly equivalent to the world market price for an amount of oil with a similar heat content. The phase-in of higher gas prices was tied to an estimate of the 1985 world oil price when the bulk of the controls were to expire. Congressional staffers selected the figure of \$15 per barrel as their target. This, however, allowed little flexibility in adjusting the rate should the target prove wrong. When oil prices skyrocketed in the wake of the Iranian revolution, NGPA served to increase rather than narrow the gap between the market price for natural gas and that allowed under controls. The effect of using the fixed target is dramatically illustrated by comparing the increase in the world market price for natural gas in the first year following enactment of the NGPA with the increase in the domestic gas price. In that first year after enactment, the world price of natural gas rose 48 percent while domestic prices increased only 11.6 percent. As the turmoil in Iran and other factors pushed crude oil prices even higher, gas prices followed on the world market, but not in the U.S. As a result, the gap between the market price and the controlled price for gas grew; and with it grew the likelihood of a severe price spike if controls were lifted abruptly in 1985.

It is still possible to avert the severe price increase that decontrol opponents fear if Congress acts quickly and decisively. Few would argue that no price increase will accompany decontrol; the size of the increase is the real issue. It will be determined by a number of factors.

Among them, none will be as important as the extent to which new supplies become available. In fact, the question of supply was one of the most contentious issues during the original natural gas debate and remains hotly contested.

HOW MUCH GAS IS THERE?

A main reason for widespread confusion over the true extent of U.S. gas resources is the confusion over the terms used to describe them. In most cases, discussions focus on what are termed "proved reserves." These include only those gas deposits "proved" through drilling. In effect, proved reserves are what are "on the shelf," without further exploratory drilling. The emphasis most observers place on proved reserves can be misleading because exploratory drilling goes on constantly. Therefore, the term only describes immediately available gas supplies but gives little information as to what future supplies could be.

What may happen in the long term is indicated by estimates of the "resource base." This term describes, albeit imperfectly, the total amount of a resource which eventually could be made available. Some believe that this form of estimate is unreliable because geologists frequently note that it rests on a higher degree of "speculation" than do estimates of "proved reserves."

However, the term "speculation" in this context should not be confused with common usage. It does not mean that the estimates are unreliable, but rather that they are less certain than those based on actual drilling experience. "Resource base" estimates are important because they provide a far better idea of the extent of the resource in question and because they attempt to assess what will be available in the future as well as what is on hand today. Also, they help indicate when a resource is likely to be exhausted.

There are two authoritative estimates of the resource base: those by the U.S. Geological Survey and the Potential Gas Committee (PGC) of the Colorado School of Mines. Geological Survey estimates are made annually; PGC figures are released every two years.

According to the latest available figures, which include 1980, the PGC estimates that the remaining natural gas resources of the United States total 913 trillion cubic feet. The Geological Survey places the figure at 730 Tcf. The relatively wide variation reflects the fact that there is room for disagreement over the extent of a resource within a given geologic formation prior to drilling. This is the reason that the term "speculative" is used in connection with such estimates. Yet, both figures indicate that vast untapped natural gas resources remain in the U.S. These resources can be brought to market with appropriate incentives.

Bearing in mind that current federal controls on natural gas are a response to fears that the resource was in imminent danger of exhaustion, it is useful to look at how the USGS and PGC estimates translate into what is termed "resource life." This refers to the number of years which the potential reserves of a resource will last at anticipated rates of consumption. For natural gas, consumption rates are expected to remain relatively stable or even decline slightly for the foreseeable future. Assuming this occurs, with consumption at about 20 Tcf per year, the PGC estimate equals a resource life of over 45 years. The more conservative USGS estimate translates into a natural gas life of 37 years. These estimates, moreover, only include supplies from conventional sources. If gas from sources such as coal seams or geopressured methane becomes economically recoverable, the resource base, and with it the resource life, would increase greatly.

Gas supplies, of course, are not merely a function of the resource base. Until someone drills for them, they remain merely a potential. An important consideration, therefore, is the drilling response after decontrol.

DECONTROL AND DRILLING

In gauging the likely drilling response to gas decontrol, the best indicator is the experience with phased oil decontrol.

In 1980, the first full year of the phase-out, the industry drilled 60,845 new wells, breaking the record of 57,077 set twenty-four years earlier. Preliminary figures for 1981 show some 83,000 new wells, a 36.4 percent increase over 1980. Also, the number of drilling rigs in operation has steadily increased with the phase-out of oil controls; rigs rose from 2,910 in 1980 to 4,503 in 1981. During January 1982, approximately 4,600 rotary rigs were active. This is nearly 2.8 times the 1,656 rigs active in 1976.

The strong drilling response in the wake of oil decontrol suggests a similar response if controls are removed from gas.

There is considerable historical evidence that price incentives will spur gas exploration. In 1972 and 1973, rising prices on the intrastate market led to a sharp increase in drilling for gas earmarked for that sector. When the demand was satisfied, drilling tailed off. But when the FPC granted some price increases for interstate gas in the middle 1970s, drilling picked up again -- only to slow following enactment of the NGPA. Clearly, drilling in the gas market responds to price incentives. In the short term, however, a shortage of rigs may limit the acceleration of drilling activity. Nevertheless, the current upward trend should be sustained.

PRICES AFTER DECONTROL

The key to understanding what may happen to gas prices after decontrol is what economists call "fungibility." This term describes the degree to which one commodity can be substituted for another. When two commodities have a high degree of "fungibility," they are relatively interchangeable. In the case of natural gas and fuel oil, it is commonly accepted that a high degree of fungibility exists in the industrial sector. This, in turn, assures that the extent of the price rise after decontrol will be governed in large part by the availability of substitutes for gas. Therefore, the substitutions that could take place if prices go up too much and how such substitutions affect prices are of critical importance in assessing decontrol.

In 1980, the most recent year for which accurate figures are available, natural gas was consumed as follows:

Industrial Sector	48.5%
Commercial/Residential Sector	38.9%
Utility Sector	9.7%
Transportation Sector	2.9%

Nearly half of all natural gas is thus consumed by industrial users, with nearly 30 percent of total consumption used in indus-

trial boilers. Most of these boilers can use either gas or fuel oil as a result of the curtailment policy of the Federal Power Commission in the early 1970s. Since these boilers account for such a large part of overall gas consumption, industrial boiler use tends to play a major role in determining gas prices. In fact, the purpose of many restrictions on natural gas use enacted by Congress has been to limit boiler consumption to guarantee supplies for residential customers.

Of course, the principal factor determining whether an industrial boiler uses gas or some substitute in a free market is price. If the price of the substitute is lower than the price of gas, industrial boilers will switch; if the substitute's price exceeds that of gas, they will not. How then do prices compare?

In comparing the price of natural gas with its competitors, it is necessary to recognize that industrial boiler use will be the principal factor determining the wellhead price, i.e., that paid in the field. Home heating, which constitutes the lion's share of residential use, is seasonal and pipelines could not function if that were the only application for natural gas. The stable year-round market in industrial boilers is therefore essential to the pipelines' economic viability. It is also necessary to differentiate between the wellhead price and the burner-tip price, that paid by the consumer. The burner-tip price includes charges for transporting gas through the pipelines. These charges are substantial, but vary widely from region to region. Therefore, two consumers could be charged the same amount at the wellhead, but still be charged widely different amounts at the burner-tip because of differences in transportation charges. It is the burner-tip price of alternatives that will govern what pipelines are willing to pay at the wellhead.

Where will the price go? Although it is not possible to establish the exact price the market will arrive at with precision, the burner-tip price, that the consumer actually pays, will be effectively capped by the price of its alternatives, residual fuel oil and No. 2 fuel oil. This means that the price at the wellhead will have to be substantially below those figures, to allow for transportation charges. While the price will vary from region to region, many experts believe that at the wellhead the average price will settle somewhere around that charged for residual fuel oil. This does not mean, of course, that the price charged for gas from specific wells could not be above or below that figure.

Another factor helping to lower prices will be increased competition resulting from the removal of market impediments controls create. Under the current system, only a small proportion of the potential U.S. supply of natural gas is free of controls. Much of it is "Deep Gas" so-called because it lies in reservoirs found more than 15,000 feet below the earth's surface. Because drilling for and producing deep gas is far more difficult and expensive than is the case with gas from shallower deposits,

deep gas producers normally ask for prices far above the national average, charging prices of as much as \$11.00. Pipelines have been able to pay these high prices because deep gas remains a relatively small percentage of total gas supplies and they are able to blend it with the less expensive fuel, so that the average price to the consumer is lower. Until now, the practice of buying the expensive gas and blending it with cheaper supplies has been justified by pipelines on the basis of ensuring continuity of service. They argued that the deep gas was the only new source of supply available, and that their first obligation was to make sure their customers had fuel, whatever the cost.

Under decontrol, however, this argument will not hold up. There are large potential supplies of controlled gas at levels above 15,000 feet which cannot be economically produced at current prices. While gas from such reservoirs would be more expensive than that from controlled wells currently producing, it would be far less expensive than that now produced from the uncontrolled deep wells. As increasing amounts of gas are produced from these middle-level deposits, the competition generated will force deep gas producers to either lower their prices or shut in their wells.

Where, then, is the price likely to settle? As long as adequate supplies of residual fuel oil remain available, and all indications are that they will, it appears that the price of natural gas will settle in the range of \$4.50 per mcf. While there may be a brief surge in prices immediately following full decontrol, as occurred with oil prices, it is likely that any price increase above \$4.50 will disappear as additional supplies become available or as fuel substitution takes place. This phenomenon, of course, works both ways, with natural gas prices exerting downward pressure on residual oil prices. This assumes that gas as well as crude oil is available so that substitutions can take place. This raises the question: how much additional supply of gas is likely to be forthcoming in the event of decontrol?

SUPPLY RESPONSE UNDER DECONTROL

The resource base for natural gas is extremely large and past history indicates that drilling is quite responsive to changes in price. A recent study by Dr. H. A. Merklein of the University of Dallas projects several decontrol scenarios, ranging from a continuation of the current status quo to full and immediate removal of federal ceilings. Merklein's scenarios indicate that under most accelerated decontrol schemes, the U.S. could add to "proved reserves" of gas at a rate matching consumption within five years. Under NGPA, however, this would not occur until 1990. In a "best case" scenario, which calls for the elimination of the Windfall Profits Tax on crude oil as well as immediate decontrol of natural gas, his results indicate that by 1990 the U.S. could become self-sufficient in oil as well as natural gas.

Merklein's findings regarding the likely supply response to decontrol closely track those of Dr. Eric Erickson of the University of North Carolina. His research indicates that, with accelerated decontrol, reserve additions would exceed consumption by 1985. But if adjustment is not made in the current NGPA schedule, Erickson's study predicts a shortfall of 10 percent to 20 percent in that year.

What is clear from these and other analyses is that the supply response which would accompany natural gas decontrol would be significant and that it would lead to a reversal of the long-standing trend towards declining gas reserves.

CONCLUSION

The lesson learned from the history of natural gas regulation is that nothing works better than the market in allocating a scarce resource. The shortages, price inequities and other market dislocations which plagued the interstate gas market were absent from the unregulated intrastate market. Time and again, history teaches that shortages and higher prices are the inevitable legacy of controls. Controls work no better for natural gas than for any other resource or product. If, as some fear, we really are running out of gas, then controls and price ceilings are particularly undesirable because they would encourage overconsumption of a scarce resource. And if gas is not running out, then price controls are undesirable because they would tend to limit the availability of supplies and push prices up.

Many of the fears fueling support for continued federal regulation are not supported by the facts. Supplies are not in danger of imminent exhaustion; in fact, there are adequate undeveloped resources to last well into the next century. Further, if oil decontrol is any indication, it can be expected that a surge in drilling activity to locate and develop these resources will be sparked by decontrol. Finally, the continued availability of residual fuel oil will act as a brake on gas prices, ensuring that any price increase is limited.

Perhaps the most important reason to accelerate the decontrol schedule is to eliminate the last significant vestige of federal interference in the energy market. At present, natural gas is the only major fuel remaining under federal price ceilings. As such, it throws the rest of the energy market out of balance and distorts the price relationships which would normally exist between fuels. Congress recognized this fact when it originally enacted the NGPA, making price parity the original goal. It is clear that NGPA will not achieve price parity but will in fact prevent it. Therefore, the law should be amended to fulfill the congressional intent.

Price controls do not ensure lower prices; they could have the opposite effect for natural gas. As old, price-controlled

gas fields are exhausted, under current circumstances they are likely to be replaced with costly natural gas from deep reservoirs. As this expensive gas accounts for increasingly large shares of total gas supplies, the effectiveness of the cushion of price-controlled gas will be diminished, and the consumer will have to bear the burden.

From almost any perspective, the continuation of controls on natural gas prices makes no sense. It undermines America's effort to become energy self-sufficient. It ultimately increases prices to consumers. It distorts the energy market. The only sound course of action is to lift controls as soon as possible. Ideally, controls would be lifted at once, opening the possibility of energy self-sufficiency within the decade. At a minimum, they should be phased out more rapidly than is currently called for under the NGPA. To do otherwise is to ensure exactly the result Congress sought to avoid.

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