ISSUE

Should the Administration seek legislation now to accelerate the deregulation of natural gas supply and demand? If so, what specific decontrol option should be proposed?

BACKGROUND

The Administration is philosophically committed to the use of markets to allocate natural resources. This commitment implies that the ultimate goal of Administration initiatives should be the full decontrol of both supply of and demand for natural gas. The decision on the timing and scope of deregulation initiatives should be made with an appreciation of the history of natural gas regulation.

The Turning Point

The natural gas industry, which provides 25% of the United States energy supply, is heavily regulated. Regulation of the transmission and distribution of natural gas by state and federal authorities is similar to electric utility regulation and began for many of the same historical reasons. In 1938, Congress passed the Natural Gas Act, which gave the Federal Power Commission the authority to regulate the interstate transportation of natural gas. In 1954, the Supreme Court's decision in Phillips Petroleum Co. v. Wisconsin extended public utility-like regulation to gas sold from the wellhead into interstate commerce.

The Regulatory Fix

In 1978, Congress passed laws which phased in decontrol over a long period of time. Under the NGPA, wellhead prices for certain categories of gas are decontrolled in 1985 or 1987, but certain categories remain price controlled for all time. The volume of gas supplies which remain price-controlled beyond 1985 are estimated to be substantial: ___ to 40% in 1985 and ___ to 20% in 1990. In addition, price regulation was extended to the intrastate market to reduce the disparities caused by the two market systems.

This partial decontrol strategy reflects a combination of judgments about energy policy, macroeconomic policy and social policy. The framers of the Act believed that their carefully designed price structure would maximize supply response while
minimizing consumer and macroeconomic impacts. The escalation rates for wellhead price increases were designed to reach market-clearing levels (at then current world oil prices) by 1985, thus producing a smooth transition to decontrol. Higher prices to "new" gas would maximize the supply response, while continued price controls on old gas would keep prices low to consumers. Gradual price increases were also believed to be less harmful to macroeconomic performance than the sudden price increases which would accompany immediate decontrol. In addition, the NGPA included the so-called "incremental pricing" provisions to "protect" residential (and other) customers from bearing the full burden of the gradual wellhead price increases under the NGPA. Thus, natural gas decontrol was designed to accomplish certain social as well as energy policy objectives. Indeed much of the bitter debate in 1977-78 over the NGPA centered on the macroeconomic and income distribution consequences of the various decontrol options.

In 1978, the Powerplant and Industrial Fuel Use Act (FUA) and the Public Utility Regulatory Policies Act (PURPA) were also passed to counteract some of the widely perceived adverse effects of continuing price controls: excess demand for gas and the underpricing of gas. FUA restricted the use of natural gas by electric utilities out of a belief that natural gas supplies would be too scarce and valuable for use in boilers. PURPA mandated the study of natural gas rates to encourage conservation and efficiency. In effect, FUA and PURPA were regulatory solutions to the problems created by the extension and expansion of wellhead price controls. Having made the decision to allow wellhead price decontrol in a gradual fashion, Congress was willing to regulate the demand side to approximate the projected outcome in a fully decontrolled market.

These policies bet on the future in three respects:

1. The domestic supply potential would prove to be small, implying that "scarce" natural gas supplies must be carefully husbanded for future "high-priority" customers;

2. A gradual approach to decontrol would be in the national interest because the price schedule in the NGPA would get wellhead prices close to market-clearing levels by 1985 and because the macro-economy needed time to adjust to higher prices; and

3. World oil prices would remain at 1978 levels.
Events since 1978 have shown us that these were bad bets. The supply picture is somewhat more optimistic, and world oil prices more than doubled. These events raise questions about the likelihood that existing policies will be fully implemented.

The Urgency for Action

From the standpoint of market conditions, the timing for an initiative to accelerate decontrol is good. Gas market conditions are favorable, and the shortages of the 1970's have abated. The oil market is currently slack, and the economy is likely to be experiencing relative stability in oil prices in the short run. As will be seen below, the efficiency gains from accelerated decontrol of natural gas markets are substantial. As we get closer to 1985, the arguments for acceleration get weaker. From a political standpoint, this will always be a difficult issue. The passage of time will not make it any easier.

The Choices

The Administration should consider three broad strategies:

1) Do Nothing: Let the NGPA and FUA play out.
2) Demand Deregulation: Repeal the demand restrictions (FUA and incremental pricing) now and leave the NGPA wellhead pricing provisions intact.
3) Supply and Demand Deregulation: Deregulate both the supply of and the demand for natural gas.

If Option 3 is chosen, decisions about both the timing and the scope of wellhead price decontrol are needed.

Analysis of Effects

The assessment of the policy consequence of the "do nothing" option substantially affects the measurement of the effects of all three strategies. Already, the FUA restrictions on gas use have been relaxed to allow the unexpectedly large short-term availability of gas supplies to displace imported oil. By 1985, the NGPA is likely to cause substantial discontinuities in the gas market at the time of decontrol, including a substantial price jump between 1984 and 1985. The transition problems raise the specter of continued price controls beyond 1985. Indeed, Congress explicitly left open the opportunity to reconsider decontrol just prior to 1985 and gave both itself and the President the authority to reimpose price controls. If one concludes that continued price controls after 1985 are more likely than decontrol under the NGPA in 1985, the urgency for
acting now is increased. The efficiency and energy security benefits of accelerating decontrol increase substantially when compared to continued regulation, as do the costs of delaying action. If demand deregulation alone is pursued now, it may make supply deregulation later more difficult to achieve because one current constituency for action today (electric utilities) may later oppose supply deregulation if the issues are not linked. Similarly, the basis for making comparisons of equity consequences is critical: current gas users obtain large benefits from using price-controlled gas. If existing policies are altered, current beneficiaries lose. Thus the appropriateness of using energy policy as an instrument for achieving social welfare objectives is an issue in this decision. Finally, one's judgment about the relative importance of supply-side versus demand-side effects on the economy affects the assessment of whether the negative effects of higher gas prices on the economy's performance are outweighed by the beneficial effects of improved resource allocation.

These four judgments—about the likelihood of continuation of price controls beyond 1985, the wisdom of linking supply deregulation to demand deregulation, the appropriateness of using energy policy as an instrument of social policy, and the relative importance of supply-side versus demand-side effects—provide a framework for decision-making on natural gas decontrol. Below, the efficiency and energy security effects of the strategies are assessed first, and the macroeconomic and equity consequences are treated second.

2. Efficiency and Energy Security

Current policy decreases economic efficiency in three ways:

1. Low regulated prices provide incorrect price signals to users who have access to gas supplies, thus distorting conservation and conversion decisions;

2. users who do not have access to gas supplies (because of curtailments, hookup moratoria, or FUA restrictions) must use more costly alternative fuels;

3. the NGPA pricing scheme inhibits gas production prior to 1985 and prevents the nation from producing the least-cost mix of energy supplies.

Decontrol will increase efficiency by increasing conservation, encouraging conversion to less costly energy sources, allocating available gas supplies to those who value it most, and allowing the least-cost mix of gas production (and possibly reducing the border price for gas imports). The efficiency gains (and losses) reported below are estimates of the dollar value of these effects.
Decontrol may reduce oil imports because of the large potential for oil-to-gas switching in the industrial and electric utility sectors. These users are currently using oil but might convert to gas if uncertainty about gas supply availability were resolved and demand restrictions were lifted. The market clearing price for gas will be set by the balancing between the gas supplies which are available at oil-equivalent prices and the extent of demand at oil-equivalent prices. As gas prices rise under decontrol, more gas is available (both through conservation and through increased production) to back out oil in the industrial and electric utility sectors. If gas prices rise too high, this demand will switch back to oil, and gas prices must drop to regain the demand.

Do Nothing: The same arguments which are being raised against accelerated decontrol today will be heard again in 1985 as arguments against letting the NGPA proceed. If the Administration decides to continue current policy, the unintended outcome may well be in extension of price controls beyond 1985. Continuation of price controls beyond 1985 would have high costs in terms of economic efficiency and energy security: a loss in economic efficiency of $34 billion (net present value) compared to the NGPA and an increase in oil imports of 580 MB/D in 1985 and 580 MB/D in 1990 (a cumulative increase of 3.2 billion barrels by 1995). (See Table 1)

Demand Deregulation: While demand deregulation improves efficiency and reduces oil imports compared to current policy, the benefits are small compared to the supply and demand deregulation options. Demand deregulation improves domestic efficiency by $8 billion (NPV) and reduces oil imports by .2 billion barrels (cumulative by 1995). However, the cost of gas imports potentially increases by $4 billion (NPV). If the gas market were slack, demand deregulation might have higher efficiency gains and oil import savings.

Supply and Demand Deregulation: Options which accelerate supply and demand deregulation create substantial efficiency and

1/ Referred to as NPV hereafter; a discount rate of 6% real was assumed. Continued price controls might also afford a savings of $16 billion in gas import costs due to the continued regulation of border prices by the U.S.

2/ A lax interpretation of FUA is assumed in the reference case. If FUA were strictly enforced under current policy, the efficiency and oil import benefits of demand deregulation would increase by $11 billion (NPV) and .5 billion barrels (cumulative) respectively.
energy security benefits compared to current policy. Domestic efficiency gains range from $13 to $21 billion (NPV) while benefits from changes in gas import costs range from a loss of $10 billion to a gain of $13 billion. Oil import reductions range from 530 to 790 MBD in 1983, 130 to 370 MBD in 1985 and .4 to 1.8 billion barrels cumulative by 1995. The efficiency and security benefits of the options depend on the timing and scope of accelerated decontrol, but are robust with respect to varying assumptions about world oil prices and gas market conditions.

Equity and Macroeconomic Consequences

Three quantitative measures of equity and macroeconomic consequences of the strategies are described below:

1. The average price increase in the first year of decontrol, both at the wellhead and to residential customers.

2. The net present value of the increase in producer revenues minus the increases in producer costs as a result of the option (termed "producer surplus" in this analysis).

3. The potential for shifts of gas between markets as a result of decontrol.

In addition, a qualitative discussion of the macroeconomic and distributional consequences of decontrol is provided.

Do Nothing: The current strategy for partial decontrol under the NGPA in 1985 fails to achieve a smooth transition to decontrol. Expectations of substantial average price increases in 1985 (82% at the wellhead and 45% for residential customers) and the potential for discontinuities in the gas market at the time of decontrol are likely to lead to a continuation of price controls beyond 1985. (See Table 2) Differences in the quantities of price-controlled gas after partial decontrol in 1985 create the potential for regional supply shifts from the interstate to the intrastate market of up to 0.5 tcf between 1984 and 1985. In part, these effects are caused by the tendency of pipelines to bid up the price of deregulated gas high enough for the average gas price to clear the market. If pipelines employ a long-run bidding strategy and moderate their competition for deregulated gas in 1985, this supply shift is reduced. However, even under these more conservative assumptions, gas price increases are substantial. The magnitude of these price increases and potentially disruptive effects is sufficiently large that Congress or the Administration may act to extend price control beyond 1985.
Demand Deregulation: Demand deregulation causes the same order-of-magnitude increases in average prices and producer surplus as the "do nothing" option. The major equity effects are to shift gas consumption from industrial and intrastate users to interstate electric utility users after 1985. In effect, demand deregulation simply allows more users (electric utilities and industry) to compete for cheap price-controlled gas, thereby diluting the benefits current (non-incrementally priced) users obtain from having access to price-controlled gas.

Supply and Demand Deregulation: All of the accelerated decontrol options lead to substantial price increases for gas consumers and to large increases in producer surplus. Wellhead price increases in the first year of decontrol range from 26 to 108%, while residential prices increase from 21 to 53%. Increases in producers surplus range from $91 to $127 billion (NPV). Put another way, current policy is conferring large benefits on those who have access to price-controlled gas. Producers and distributors of competing fuels (coal or solar producers, oil jobbers), consumers who are currently deprived access to gas, and owners of gas resources (including royalty owners, pension funds, and the U.S. government) are correspondingly disadvantaged by current policy.

Macroeconomic Consequences

Accelerated decontrol of natural gas prices will have significant demand- and supply-side effects on the U.S. economy. On the demand-side, the direct and indirect effects of increases in gas prices relative to other prices may lead to temporary losses of real output (GNP) as the economy adjusts to these price changes. One analysis suggests that the loss in potential GNP under full decontrol in 1982 may be roughly $20 billion (1972 $) in the first three years. Whether these potential short-term losses in GNP are realized depends on the ability of the Administration's macroeconomic policy to reduce the losses through monetary and fiscal policy. However, economic policymakers argue that a potential loss of this magnitude is well within the range which they can address using standard macroeconomic policy tools. Correspondingly, the inflationary and unemployment consequences of gas decontrol are as much a function of the macroeconomic policy response as of the decontrol of natural gas prices. No forecast of these effects is shown here because of the lack of an acceptable tool which can capture these cyclical effects.

On the supply-side, accelerated decontrol may contribute directly to higher levels of potential output in the long-term. Supply-side benefits occur because the efficiency gains of
decontrol described above have an important effect on the potential output of the economy as a whole. In the macroeconomy, these efficiency gains will permit reductions in the amount of real economic resources (capital, labor, and materials) needed to satisfy the energy requirements of the economy. Resources previously used in energy production could be released to other sectors of the economy.

Whether these long-term benefits outweigh the short-term costs is a key analytical question. Fortunately, the analysis thus far does suggest that accelerated decontrol would yield a net real GNP (1972 $) gain of $1.1 billion (NPV) to the economy during the 1982-1995 period. While the magnitude of this gain is small, it is important to understand that changes in real GNP cannot account for all of the economic consequences of accelerated decontrol. Indeed, the primary measure of the overall consequences of decontrol should be changes in economic welfare which incorporate the impacts not only on economic output but also on wealth and the value of other activities not measured in GNP (especially the consumption of leisure). The preliminary analysis suggests that accelerated decontrol would increase the value of wealth and the consumption of leisure. These effects, combined with the net gain in potential real GNP, lead to the conclusion that accelerated natural gas price decontrol should yield an unambiguous improvement in economic welfare.

2. **Choices Among Supply and Demand Deregulation Options**

While the benefits of full decontrol in 1982 are substantial, the Administration may want to consider less complete deregulation options. In designing policy options which lie somewhere between full decontrol in 1982 and partial decontrol under the NGPA in 1985, three issues arise:

1. **Timing:** Should decontrol be accelerated?

2. **Old vs. New:** If decontrol is accelerated, should we pursue an NGPA-like partial strategy or full decontrol?

3. **Phasing:** If full decontrol (of both old and new gas) is the goal, are there advantages to phasing in the price increases? What mechanisms for phasing-in avoid the worst pitfalls apparent from the NGPA strategy?

To answer these questions, Attachment 1 presents five supply and demand deregulation options which the Administration may specifically consider if a decision to pursue supply as well as demand deregulation is made.
SUMMARY

If the Administration wants to modify current natural gas policies, it should act soon. We have a fairly short window of time in which effective arguments for acceleration can be made. As 1985 draws near, Congress will have the excuse that decontrol will occur by itself by 1985 anyway so why revisit a difficult issue?

Even within the Administration, the urgency of acting to accelerate decontrol depends on one's judgment about the likelihood that decontrol will proceed in 1985. Every argument heard today against accelerated decontrol will be heard again in 1985. It should be remembered that Congress has a convenient fever for continuing price controls beyond 1985.

The efficiency and energy security effects argue for accelerated decontrol. The decision to accelerate rests therefore on whether the macroeconomic and distributional consequences of decontrol (and the social and political reaction to these consequences) are so troubling that the Administration should decide to forego the benefits. Put simply: what is it worth in macroeconomic and distributional consequences to achieve a free market in gas? The stakes involved in the decision are not inconsequential:

- Economic efficiency losses due to continuation and possible extension of price controls.
- Higher levels of oil imports, which potentially create an upward pressure on world oil prices and increase vulnerability.
- The regulatory burden of complex price controls.
- Continued bad press in the international community, where we are pressing our allies to move to market-based pricing.

Given these stakes, can the Administration afford to perpetuate a 27-year old mistake by continuing to subjugate energy policy decisions to income policy concerns? If we do not address the issue today, we are likely to see the extension of price controls beyond 1985.
### Table 1: Efficiency and Energy Security: Effects of Gas Strategies

<table>
<thead>
<tr>
<th>Efficiency Gain</th>
<th>1982-1995 Oil Import Savings</th>
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<tbody>
<tr>
<td>(billions of 1980 $)</td>
<td>(billions of barrels)</td>
</tr>
<tr>
<td>NPV</td>
<td>Domestic</td>
</tr>
<tr>
<td>Do Nothing</td>
<td></td>
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<tr>
<td>- NGPA in 1985</td>
<td>---</td>
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<tr>
<td>- Continued Deregulation</td>
<td>(33.7)</td>
</tr>
<tr>
<td>Demand Deregulation</td>
<td>7.5</td>
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<tr>
<td>Supply &amp; Demand Deregulation</td>
<td>12.9-20.9</td>
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### Table 2: Equity Effects of Gas Strategies

<table>
<thead>
<tr>
<th>First Year Price Increase</th>
<th>NPV of Wealth Transfer 1/2/</th>
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<tbody>
<tr>
<td>Wellhead</td>
<td>Residential</td>
</tr>
<tr>
<td>Do Nothing (1985)</td>
<td>82%</td>
</tr>
<tr>
<td>Demand Deregulation (1985)</td>
<td>84%</td>
</tr>
<tr>
<td>Supply and Demand Deregulation (1982)3/</td>
<td>26-108%</td>
</tr>
</tbody>
</table>

1/ Compared to NGPA decontrol in 1985.

2/ NPV equals the net present value of the stream of effects, discounted at 6% real.

3/ Range depends on the specific option chosen.
If the Administration decides to accelerate decontrol of natural gas wellhead prices, consideration must be given to the timing, scope (just "new" gas decontrol or both old and new gas decontrol) and phasing of the initiative. In particular, the Administration may wish to pursue options which are "inbetween" full decontrol in 1982 and the NGPA in 1985. The decision on these three factors is complicated by the multiple objectives which the "inbetween" options may be designed to serve:

1. maximize efficiency gains from accelerated decontrol
2. maximize oil import reductions from accelerated decontrol
3. gradually phase-in price increases over time
4. increase supply incentives (especially for "new" gas) above the NGPA
5. reduce the potential for market imbalances caused by differential access to price-controlled gas.

Timing

All of the options which accelerate decontrol offer significant efficiency gains (ranging from $16.2 to $20.9 billion, NPV) compared to the NGPA decontrol in 1985.

Scope (Old vs. New Gas Decontrol)

To test the effects of partial vs. full decontrol, an option which merely accelerated NGPA decontrol to 1982 was analyzed. This option decontrols all gas in 1982 which the NGPA decontrols in 1985 or 1987; price controls remain on all other categories for all time.

Effects of NGPA in 1982: Accelerating NGPA decontrol to 1982 has relatively small efficiency gains but has the highest oil import savings of all of the supply and demand deregulation options. Continuing price controls on certain categories of gas creates inefficiencies in the gas market, creates the potential for diversion of supplies from the intrastate to the interstate market, but also provides a "cushion" to roll-in higher prices for new gas supplies. The price increases in 1982 are similar in magnitude to the NGPA in 1985. New gas prices remain higher than under the NGPA for the whole forecast period because demand deregulation increases the effective demand for gas.
Thus, the choice of full vs. NGPA decontrol in 1982 turns in large part on the valuation of efficiency and gas import vs. energy security effects of the options. It should be noted that even if a $10/bbl premium is placed on oil import reductions, the sum of the domestic efficiency, gas import and security benefits for NGPA in 1982 is only $19.2 compared to a total of $40.5 for full decontrol in 1982.

Phasing

One of the major arguments for phasing is to allow consumers and the macroeconomy to adjust to a more gradual rate of increase in gas prices. While this notion is intuitively pleasing, there is little evidence to support the idea that gradual price increases are better for the economy compared to a one-time step increase. One negative side effect of the gradual price increases is that they may lead to inflationary expectations.

The next three options offer alternative mechanisms to achieve full decontrol by 1985. After 1985, these options look very much like full decontrol in 1982.

1. Price Phaseout by 1985: Increase the maximum lawful price for each NGPA category so that the maximum price for all categories of gas will reach parity with a net-back of medium sulfur residual fuel oil. The maximum lawful prices are increased each month in equal percentage increments based on the difference between the current price and the net-back price.

2. New to Oil Price/1985 Phaseout: Immediately increase the maximum lawful price for new gas to a net-back of medium sulfur residual fuel oil; allow other gas to qualify for this maximum price in equal increments to 1985.


Price Phaseout to 1985: This option seeks to ramp in the price increases between 1982 and 1985 in a reasonably even fashion by increasing the maximum lawful prices in the NGPA. The average wellhead price increases at roughly 23% per year, while the average residential price increases at 13% per year. The maximum-lawful price for new gas increases at an average of 15% per year, which may raise concerns about withholding. However, because the price increases are gradually phased in, the domestic efficiency gains from the option are 20% lower than under full decontrol in 1982.
New to Oil Price/1985 Phaseout: This option immediately raises the price for new gas to a regulated level close to the "market clearing" price for new gas under full decontrol, and phases out price controls on other categories by 1985. By getting the new gas price up early, it achieves 90% of the domestic efficiency gain shown under full decontrol in 1982. Price increases in 1982 (62% at the wellhead and 32% for residential users) are substantially higher than the first-year increases under the price phaseout option, but lower than the new/1985 phaseout option discussed below.

New/1985 Phaseout: This option deregulates the new gas price immediately and phases out price controls on all other gas by 1985. The price increases in the first year are almost as large as the price increases under full decontrol in 1982 because of the tendency for the deregulated gas price to increase sufficiently to allow the average wellhead price to balance the market. This higher marginal wellhead price increases oil import savings slightly above full decontrol, and achieves roughly the same efficiency gains.

In summary, most of the options which phase to full decontrol by 1985 offer higher efficiency gains but lower oil import savings than accelerating NGPA decontrol to 1982. If it is considered desirable to phase in the price increases evenly over the 1982-1985 time period, schemes which increase the maximum lawful prices offer a higher likelihood of success than options which deregulate certain categories immediately. However, options which rely on maximum-lawful prices run the risk of undershooting actual market clearing levels, thereby creating a "price gap" just prior to full decontrol in 1985. All of the options which culminate in full decontrol reduce the potential for large shifts of gas between markets.
## IMPACTS OF ALTERNATIVE POLICIES
UNDER REFERENCE CASE ASSUMPTIONS

<table>
<thead>
<tr>
<th>POLICIES</th>
<th>Net Present Value of Change in Net National Benefits (1982-1985) (Billions of 1985)</th>
<th>Oil Import Savings (Billions of Barrels per day)</th>
<th>Net Present Value of Change in Wealth Transfer (1982-1985) (Billions of 1985)</th>
<th>% Increase in Average Price in First Year of Decentral</th>
<th>Potential Inter/Intra State Shift in Year of Decentral (tcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Full in 1982</td>
<td>+20.9</td>
<td>630</td>
<td>410</td>
<td>1603</td>
<td>543</td>
</tr>
<tr>
<td>(2) BGPA in 1982</td>
<td>+10.1</td>
<td>730</td>
<td>410</td>
<td>1603</td>
<td>543</td>
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<tr>
<td>(3) Price Phaseout by 1985</td>
<td>+16.2</td>
<td>570</td>
<td>230</td>
<td>+91</td>
<td>Negligible</td>
</tr>
<tr>
<td>(4) New to Oil Price/1985 Phaseout</td>
<td>+10.5</td>
<td>630</td>
<td>230</td>
<td>+100</td>
<td>Negligible</td>
</tr>
<tr>
<td>(5) New/1995 Phaseout</td>
<td>+20.9</td>
<td>730</td>
<td>230</td>
<td>+127</td>
<td>Negligible</td>
</tr>
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1/ Discounted at 6% real.