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## CHAPTER II. EFFECTS OF THE SENATE AND GEPHARDT BILLS

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This chapter estimates the effects of the natural gas wellhead pricing provisions found in the bills reported by the Senate Energy and Natural Resources Committee (S. 1715, hereafter, the Senate bill) and proposed by Congressman Gephardt (H.R. 2154), compared to those that occur under the Natural Gas Policy Act (NGPA). It first discusses the assumptions and methodology underlying the estimates and then presents them. A third section analyzes major features of the two bills that concern issues other than wellhead pricing. Although these features (which mainly address changing contract provisions) are important, they cannot be precisely incorporated into econometric simulations of the bills.

In general, when compared to the NGPA, the macroeconomic effects of both the Senate and Gephardt proposals are very small--in many cases, negligible. These small differences can be attributed to the fact that gas prices under the NGPA's phased decontrol have already risen to the range that they would reach in a competitive market. In fact, decontrol under the Senate proposal would actually lower prices in the several years following its enactment by allowing the gas market the opportunity to "reorder" itself--that is, pipelines would have the freedom to renegotiate contracts with producers in order to buy low-priced gas before high-priced gas. Many of the pipeline's current contracts are with producers of high-priced gas and require the pipelines to purchase this gas whether or not the pipelines can resell it at the higher prices. Prices also would fall under the Gephardt bill, but more because of the reintroduction of controls rather than the reordering of gas supplies. However gas decontrol is implemented, its effects would certainly not be comparable to the dramatic increase in oil prices resulting from their decontrol in 1979.

The more sizable differences between the two proposals would occur in the natural gas market. By redistributing revenues from more expensive gas sources to cheaper ones, the Senate bill would encourage additions to domestic gas reserves and, in turn, supplies, thus lowering gas imports. By maintaining the dichotomy between high- and low-priced gas, the Gephardt proposal would do the opposite and, consequently, would result in larger gas imports. Yet even these effects would not be very large--by 1990 the difference in domestic gas reserves between the Senate and Gephardt bills would be less than one year's gas consumption. It should be noted, however, that the natural gas market effects of these two proposals would grow until

old gas was depleted (presumably in the early 1980s) under the Gephardt bill, at which point they would converge.

### ASSUMPTIONS AND METHODOLOGY

The analysis presented in this report involves two interrelated steps:

- o Annual gas prices must be estimated under the NGPA, the Senate, and the Gephardt bills; and
- o Based on these estimates, economic and natural gas market effects must be calculated.

As current law, the NGPA serves as the base case for this analysis. The effects of the Senate and Gephardt bills are shown as changes either from this base case or, for macroeconomic effects, from the CBO baseline projections. 1/

#### Gas Prices

Prices under the NGPA were determined in the following manner. The NGPA divides all of the nation's gas into categories according to nine major sections. The NGPA then stipulates prices for each of these sections--some are allowed to grow at the rate of inflation, some at the rate of inflation plus some growth premium, and one section (Section 107, or "high-cost" gas), was deregulated immediately in 1978. The provisions of the NGPA allow some sections to be deregulated on January 1, 1985, and the rest, including old, low-priced gas, to remain regulated (but allowing prices to rise at the rate of inflation) in perpetuity.

To establish the NGPA base case, CBO developed price projections for gas under each section of the NGPA. The price of gas deregulated in 1985 was determined by assuming that gas, once delivered to local distribution companies (at "city-gate" prices), was equal in price per Btu to the price of oil purchased by manufacturing firms (or, the oil-equivalent price), in which use gas most directly competes with oil. To determine the average wellhead price of gas, projected pipeline transmission costs were subtracted from this

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1. These projections were presented in Congressional Budget Office, The Outlook for Economic Recovery (February 1983); and were updated in The Economic and Budget Outlook: An Update (August 1983). See footnote d of Table 5 of this chapter for further explanation.

oil-equivalent price. Projections of the quantity of gas available in each section were then developed, based on similar projections made by the Energy Information Administration.<sup>2/</sup> In general, gas prices rise slightly more rapidly than the price of oil following the NGPA's decontrol in 1985 because low-priced gas comes from older fields and, therefore, would be depleted and replaced by newer supplies whose price reflects the price of oil.

Prices under the NGPA are also influenced by the assumptions made about contract provisions. As discussed in Chapter I, contract provisions are now the subject of a variety of legal proceedings, and many contract prices are being renegotiated downward. In the absence of renegotiation, many gas pipelines would be locked into contracts that tied the price of gas, upon deregulation, to prices in excess of oil-equivalent levels (such as 110 percent of the price of distillate fuel). If these contracts were honored, many pipelines would face substantial load loss and some would be in danger of bankruptcy. Thus, it was assumed that renegotiation would permit deregulated gas prices to reach oil-equivalent prices, rather than prices above that level. The exception to this assumption, however, is the price of high-cost (Section 107) gas, which is now above the oil-equivalent price but is decreasing as market pressures force pipelines to renegotiate. The price of Section 107 gas is therefore assumed to fall from \$6.04 per thousand cubic feet in 1983 to \$4.50 in 1985, and to remain thereafter at that level in current dollars.

An additional assumption concerns the price of imported gas. Imported gas is now more expensive than its average domestic counterpart, but indications are that its price also may be renegotiated downward over the next several years. This analysis, however, did not assume that further renegotiation would take place, given the international political issues involved. Thus, gas imports are assumed to cost about \$4.42 per thousand cubic feet in constant (1982) dollars throughout the projection period.

Price levels under the Senate bill reflect the pricing guidelines found in that bill. The bill would deregulate some gas immediately, and phase the price of the rest of domestic gas production towards an "indicator price," which would be reached by 1987. This indicator price of decontrolled gas at the city gate was, again, assumed to be the heat-equivalent price of oil, that is, the price of delivered gas was assumed to reach the price of oil in the manufacturing sector on a per Btu basis. This assumption is discussed in

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2. Department of Energy, Energy Information Administration, The Current State of the Natural Gas Market, DOE/EIA 0313 (December 1981).

greater detail in the section describing the Senate bill. Prices under the Gephardt bill also reflect the provisions found in that bill. Specifically, the Gephardt bill postpones the decontrol provisions of the NGPA until January 1, 1987, at which time the price of gas that is decontrolled reflects the price of oil.

Gas prices in this analysis, therefore, depend on the price of oil. The higher the price of oil, the higher gas prices will be upon decontrol. Higher gas prices, in turn, increase the magnitude of the effects of decontrol. The results presented in this chapter assume that the price of oil delivered to U.S. refineries is, on average, \$29.70 per barrel in 1984 (equivalent to about \$28.00 per barrel at the wellhead) and remains at that level thereafter in constant dollars. In Chapter III, the analysis found in this chapter is reproduced, using higher and lower oil price assumptions.

Another important assumption in this analysis is that local gas distribution companies, under the direction of state public utility commissions, do not assign any particular group of users a disproportionate share of higher gas costs when they arise. This assignment of costs is a potential problem because, in general, industrial users pay a lower price for gas than do residential users, since gas competes with a cheaper fuel (residual oil) in the industrial sector than in the residential sector (which uses distillate fuel, or home heating oil). Therefore, some state utility commissions could direct any new cost burden to residential users rather than industrial ones. In fact, some commissions may consider doing so in order to keep business costs low in their jurisdictions. This analysis assumes that the distribution of gas costs between these two groups reflects patterns observed in the past.

### Economic and Gas Market Effects

The second step of the analysis involved simulating, using an econometric model, interactions between the energy sector and the economy as a whole. Most of the previous work in this area has used one of two major approaches. The first examines the effects of energy price changes using existing macroeconomic models (for example, the DRI or Wharton models). The difficulty associated with this method is that most of these models may fail to measure realistically energy substitution possibilities, and they consequently run the risk of overstating the price, output, and energy market effects of decontrol or other pricing policies.

The alternative approach involves examining energy price changes in the context of long-term economic growth (the "Hudson-Jorgenson" approach). The difficulty associated with this approach is it fails to

incorporate unemployment and wage-price rigidities. Thus, this approach risks understating the effects of pricing policy changes, since wage and price rigidities and the gradual response of households and firms to changing energy prices lie at the heart of the economy's adjustment to changing energy prices.

The methodology used in this analysis combines aspects of both approaches. A model is employed that explicitly links energy demand relationships with economic aggregates. It does so by estimating the demand for energy, labor, capital, and materials in each sector of the economy. When energy prices change, the model describes how consumers reallocate their expenditures among sectors and, given this reallocation, how each sector's demand for labor, capital, energy, and materials will change. Once each sector's demand for these productive factors is recalculated, the resulting factor payments (such as wages, interest, energy costs, and the like) are estimated. These factor payments are totaled into national income, which the model then reallocates among savings and consumption by sector. Once aggregate energy demand by sector is determined, different energy forms are allowed to compete until the cheapest combination of fuels is achieved. Thus, in this model, changing energy prices change the composition of goods the economy produces, changes the way the economy produces them, and changes total consumption and investment in the economy, all simultaneously. Moreover, the model allows observation of changes in inflation and employment. 3/

The model also estimates gas supplies by estimating the rate at which gas reserves (both new reserves and extensions of old ones) are sought and discovered. These reserves are then depleted to form supplies. When domestic gas supply and demand change, the model changes gas imports to accommodate them. But since gas imports are more expensive than domestic gas, the model recalculates average gas prices and restarts the process until it reaches a solution. Although some energy analysts contend that decontrol would completely eliminate gas imports, the model does not show that this happens under the base oil price assumptions described above. Imports do drop, however, as decontrol induces more domestic production.

One final caveat is in order. In theory, macroeconomic modeling resembles a science, but in practice it is more like an art and is, therefore, less precise. Results obtained from different models will differ as do the models themselves. Many of the results presented in this analysis depend

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3. See Congressional Budget Office, An Empirical Analysis of Energy-Economy Interactions (forthcoming). This technical analysis paper documents the model extensively.

critically upon important parameters, such as the estimated responsiveness of gas supply and demand to changes in price. Moreover, prices are affected by the ability of pipelines to shift their purchases of gas from high-cost to low-cost sources. While assumptions can be made regarding this type of institutional behavior, the true effect cannot be estimated with precision. Thus, a certain amount of uncertainty enters the estimates found in this analysis. Consequently, the estimates should not be construed as unerring and definitive statements of the effects they represent. They do, however, strongly indicate the magnitude and direction of those effects.

### ANALYSIS OF WELLHEAD PRICING PROVISIONS

This section presents the results of simulations of the Senate and Gephardt proposals, using the assumptions and methodology described above. The effects of the Senate and Gephardt proposals are depicted in the form of changes from the effects that would result if the NGPA remained in force. Thus, this base case is described first.

#### The Base Case: NGPA

Table 1 presents estimated average wellhead and city-gate prices of natural gas (per thousand cubic feet) under the NGPA. It shows that average constant dollar wellhead gas prices will not change in 1985 as a result of the NGPA's decontrol provisions. This reflects that fact that prices have already risen to levels near the decontrolled prices. The average city-gate price (that is, the average price at which pipelines deliver their gas to local distribution companies) rises by 11 cents, or 3 percent, in constant dollars, reflecting rising gas imports, pipeline mark-ups, and reduced capacity utilization in that year. Gas prices then rise slightly over the remainder of the 1980s (about 1 percent annually) as price-controlled old gas is depleted and replaced by new gas at decontrolled, oil-equivalent prices, and as oil imports increase.

Table 2 presents estimates of natural gas consumption from 1983 to 1990 under the NGPA. Consumption declines from 17.8 trillion cubic feet in 1983 to 17.1 trillion cubic feet in 1985, and remains roughly constant thereafter. This lower consumption results from competition from oil and other fuels and continued improved energy efficiency in the economy. It should be noted that the decline in gas consumption occurs in the manufacturing, utility, and commercial sectors, in which gas more frequently competes with lower-priced residual oil. On the other hand, gas consumption increases in the household sector, in which it competes with more expensive distillate (home heating) fuel.

**TABLE 1. AVERAGE WELLHEAD AND CITY-GATE PRICES OF NATURAL GAS UNDER THE NATURAL GAS POLICY ACT AND BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990**

Year	Wellhead Prices		City-Gate Prices	
	In Current Dollars	In Constant Dollars	In Current Dollars	In Constant Dollars
1983	2.63	2.54	3.98	3.85
1984	2.69	2.50	4.17	3.87
1985	2.81	2.49	4.49	3.98
1986	2.92	2.47	4.75	4.02
1987	3.11	2.51	5.08	4.11
1988	3.28	2.53	5.38	4.15
1989	3.45	2.54	5.69	4.19
1990	3.62	2.54	6.00	4.21

NOTE: Base oil prices are presented in the center columns of Table 8 in Chapter III.

**TABLE 2. U.S. NATURAL GAS CONSUMPTION, BY SECTOR, UNDER THE NATURAL GAS POLICY ACT AND BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990 (In trillions of cubic feet)**

Sector	1983	1984	1985	1986	1987	1988	1989	1990
Residential	4.9	5.0	5.0	5.1	5.2	5.3	5.4	5.5
Commerical	1.9	1.8	1.7	1.6	1.6	1.6	1.6	1.5
Manufacturing	5.3	5.1	5.0	4.9	4.9	5.0	5.1	5.1
Electric Utility	3.4	3.3	3.2	3.2	3.1	3.1	2.9	2.7
Other	<u>2.2</u>	<u>2.2</u>	<u>2.2</u>	<u>2.2</u>	<u>2.3</u>	<u>2.3</u>	<u>2.3</u>	<u>2.3</u>
Total	17.8	17.3	17.1	17.1	17.1	17.3	17.3	17.2

NOTE: Numbers may not add to totals because of rounding.

Table 3 depicts gas market reserves and supplies (production) under the NGPA. Domestic production is projected to decline from the 1983 level of 16.8 trillion cubic feet to 15.2 trillion cubic feet in 1990. Although reserve additions do increase in the first several years following decontrol in 1985 (up from 14.2 trillion cubic feet in 1984 to 15.3 trillion in 1985), by 1990 domestic reserves are about 12 trillion cubic feet lower than today's level. This occurs because the rate at which gas is added to reserves is lower than the rate at which gas is produced, reflecting declining geological discoveries. With reserve additions and domestic production that decline more rapidly than does domestic consumption, gas imports rise from 1.0 to 2.0 trillion cubic feet from 1984 to 1990. This gas, which is imported as

TABLE 3. NATURAL GAS RESERVE AND PRODUCTION PROJECTIONS UNDER THE NATURAL GAS POLICY ACT AND BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990 (In trillions of cubic feet)

	1983	1984	1985	1986	1987	1988	1989	1990
Total Reserves <u>a/</u>	182.0	179.0	179.0	179.0	178.0	176.0	173.0	170.0
Reserve Additions	14.3	14.2	15.3	14.9	14.1	13.4	12.9	12.4
Domestic Production	16.8	16.4	15.5	15.3	15.3	15.4	15.3	15.2
Natural Gas Imports <u>b/</u>	1.0	1.0	1.6	1.7	1.9	1.9	1.9	2.0

NOTE: Number changes in this table may not add because of rounding.

- a. Changes in total natural gas reserves are calculated by subtracting domestic production from reserve additions.
- b. Natural gas imports are equal to natural gas consumption, shown in Table 2, minus domestic production, shown in line 3 of this table.

overland gas from Canada and Mexico and liquefied natural gas, mainly from Algeria, is more expensive than domestic supplies.

Thus, under the NGPA, domestic consumption, production, and the rate of reserve discovery are all projected to decline. The effects of the two alternative legislative proposals described in the following section are presented in the form of changes from this NGPA base case. Macroeconomic effects presented in the next sections are expressed as changes from CBO's baseline forecast, extrapolated to 1990 to cover the period used in this report. The CBO baseline, which is based on current law, assumes the continuation of the NGPA. 4/

### The Senate Bill

The bill reported by the Senate Energy and Natural Resources Committee assumes enactment on January 1, 1984, with a phase-in period for price and contract changes starting shortly thereafter. The bill would phase the price of all types of gas towards a target "free market" price. Initially, this target price--or, in the language of the bill, a "price indicator"--would be the price of section 103 gas, now about \$2.77 per thousand cubic feet. This price is, in fact, close to the price that would prevail if gas and oil delivered heat at equal cost. The bill then specifies that, after six months of using the section 103 price, the price indicator will become the weighted average of prices for gas sold under contracts between producers and pipelines signed in the previous six months.

The price indicator would then be used to define a target price for all gas. Gas that is priced above the indicator price level could be phased down to it over a period of 12 months, and gas priced below the indicator price could be phased up to that level over 36 months. But this phasing would occur only if one of the parties to the contract elected to do so. If the two parties to the contract (the producer and the pipeline) voluntarily renegotiated it or agreed to continue it unchanged, then no phasing would occur. Moreover, if one party to a gas contract elected to begin phasing the contract price towards the free-market price, the other party would retain the right to find a new party who would not. Thus, for example, if a gas producer elected to begin phasing the price of his old gas up to the indicator price, the pipeline to whom he sells would retain the right to find a new

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4. The CBO forecast for fiscal years 1984-1988 can be found in Congressional Budget Office, The Outlook for Economic Recovery (February 1983), updated for fiscal years 1984-1986 in The Economic and Budget Outlook: An Update (August 1983).

producer who was willing to sell gas at a lower price. It is, of course, not clear why a producer would be willing to sell at a price lower than both markets and statutes allow. Pipelines, on the other hand, might be willing to pay a premium if it allowed them to secure long-term access to gas reserves. Similarly, a producer of high-cost gas might find a new pipeline to contract with if the pipeline to whom he sold elected to phase his price down to the indicator level.

The major exception to the decontrol provisions found in the Senate bill concerns direct sales of gas--that is, sales from producers to large end users who do not resell the gas to subsequent users or distribution companies. The great bulk of these direct sales occur in the intrastate gas market, in which large utilities and manufacturing facilities (predominantly in Texas and Louisiana) buy gas directly from producers under contracts that often predate the 1970s. The Senate bill, therefore, would shield substantial price savings for these users.

Through its price-phasing mechanisms, the Senate bill would provide fairly strong incentives for the average gas price to reach its oil-equivalent price at the point of final use. Pipelines with endowments of cheap, older gas would find its price increased substantially over the three years of phasing. Paying more for old gas would limit the amount of new higher-priced gas that pipelines could buy to average in with cheap gas. Thus producers of new gas should encounter difficulties in finding pipelines willing to pay prices for new gas greatly in excess of the oil-equivalent price. This analysis assumes that the Senate bill would induce wellhead gas prices to converge around a level equal to the heat-equivalent price of oil purchased by the manufacturing sector, minus an allowance for transportation and other processing and distribution costs.

The Senate bill also addresses the need to resequence the order in which differently priced gas is bought during periods of excess availability. Because of contract features and the effects of regulation on the gas market, gas is not now withdrawn from the market in descending price order when demand falls. Pipelines are now locked into contracts which force them to buy high-priced gas first when excess supplies of low-cost gas are available. By encouraging renegotiation and by other features that foster contract flexibility, the Senate bill could lead to lower-cost gas supplies either by allowing pipelines to buy the cheapest gas first or by forcing producers of new, higher-priced gas to accept a lower price because of the availability of cheap gas. This analysis assumes that such a resequencing of gas supplies would occur under the Senate bill until gas prices converge at an oil-equivalent price in 1987.

Table 4 presents the average projected wellhead and city-gate prices of gas under the Senate bill. Gas prices are somewhat lower in 1984 and 1985 when compared to the NGPA (see Table 1), because the Senate bill would allow low-cost gas back into the market. In 1985, when the NGPA's decontrol provisions go into effect, the Senate bill would lower city-gate gas prices by \$0.17 (in constant dollars), or about 4 percent. Gas prices then would be higher under the Senate bill during the 1987-1989 period because it allows older, low-cost gas to rise to the oil-equivalent price while under the NGPA, older gas would remain controlled until it was depleted. But, by 1990, city-gate prices under the NGPA would catch up to prices under the Senate bill, reflecting the depletion of older gas, its replacement by new gas supplies, and the price escalation for low-cost gas that is allowed by NGPA formulas. This convergence would also occur because the Senate bill would result in the substitution of cheaper domestic supplies for more expensive gas imports. By 1990, city-gate prices would be within one cent per thousand cubic feet under the Senate bill and under the NGPA.

TABLE 4. AVERAGE WELLHEAD AND CITY-GATE PRICES OF NATURAL GAS UNDER THE SENATE ENERGY COMMITTEE PROPOSAL AND BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990

Year	Wellhead Prices		City-Gate Prices	
	In Current Dollars	In Constant Dollars	In Current Dollars	In Constant Dollars
1983	2.63	2.54	3.98	3.85
1984	2.46	2.29	3.93	3.66
1985	2.64	2.34	4.29	3.81
1986	2.91	2.47	4.70	3.98
1987	3.26	2.63	5.16	4.17
1988	3.41	2.63	5.44	4.19
1989	3.56	2.62	5.72	4.21
1990	3.72	2.61	6.01	4.22

NOTE: Base oil prices are presented in the center columns of Table 8 in Chapter III.

As seen in Table 5, long-term natural gas consumption under the Senate bill would be virtually unchanged from the base case, reflecting the fact that gas prices under the Senate bill and the NGPA are nearly equal. Consumption would be higher in the mid-1980s, however, when the Senate bill would offer some price relief. Gas production (supplies), however, would also be higher, since the Senate bill would provide greater price incentives to low-cost gas at the expense of higher-cost gas. This realignment of revenues within the industry would allow more investments in larger and older low-cost fields, so that the discovery and production of new gas reserves would increase. Under the Senate bill, natural gas reserves would be 5.6 trillion cubic feet higher by 1990 than if the NGPA remained in force. Most of these added reserves would come from extensions of known gas fields. 5/ Table 5 also shows that higher production levels would lead to lower levels of gas imports--a difference of 0.6 trillion cubic feet in 1990.

The macroeconomic differences between the Senate bill and the NGPA base case are very small, and are generally consistent with the price profiles of the two bills. Economic growth would be somewhat higher under the Senate bill in 1984 and 1985, as gas prices fall relative to the NGPA.

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5. This result depends on a crucial assumption. Under the NGPA, the Federal Energy Regulatory Commission (FERC) is authorized to offer producers "incentive" prices--that is, higher prices that, in FERC's judgment, will lead to increased gas supply. FERC has recently, in fact, offered a "production enhancement rule" to interstate producers that does just that. Under FERC's new rule, a pipeline may be allowed to pay a producer more than the controlled price for gas if the pipeline feels that the higher price will lead to higher levels of production. Thus, the FERC rule would allow pipelines to decide whether or not the higher price would lead to higher supply levels. This analysis assumed that this rule would not lead to significant changes in gas pricing and production for three reasons. First, the higher supply levels offered in response to higher prices may be small in comparison to the base volumes of gas involved. It may not be worthwhile, therefore, for pipelines to offer higher prices since the amount of new gas they receive may be small. Second, so long as the gas market is weak, such new supplies may not be marketable. Finally, given the contract provisions now found in the gas market, pipelines may be locked into existing supply sources. Specifically, if pipelines have outstanding take-or-pay obligations, they may be unable to purchase new supplies elsewhere, even if they are cheaper. This is a crucial assumption because, if it is incorrect, then some portion of the new reserves attributable to the Senate bill could be realized within the provisions of the NGPA.

TABLE 5. EFFECTS OF THE SENATE ENERGY COMMITTEE PROPOSAL ON THE NATURAL GAS MARKET AND THE ECONOMY, ASSUMING BASE OIL ASSUMPTIONS, CALENDAR YEARS 1983-1990 (Expressed as changes from the NGPA base case, in trillions of cubic feet)

Effects	1983	1984	1985	1986	1987	1988	1989	1990
<b>Market Effects</b>								
Total Reserves <u>a/</u>	0.0	0.2	0.2	0.6	1.8	3.2	4.4	5.6
Reserve additions <u>a/</u>	0.0	0.5	0.4	0.8	1.7	1.9	1.8	1.7
Consumption <u>b/</u>	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0
Domestic production <u>a/</u>	0.0	0.3	0.4	0.4	0.4	0.5	0.6	0.6
Imports <u>a/ c/</u>	0.0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6
<b>Economic Effects <u>d/</u></b>								
Real Gross Domestic Product (GDP) (Percent change)	0.0	0.16	0.11	0.02	-0.06	-0.02	0.01	0.03
Price level (Percent change in GDP deflator)	0.0	-0.35	-0.25	-0.08	0.08	0.08	0.06	0.04
Price level (Percent change in Consumer Price Index)	0.0	-0.28	-0.27	-0.13	0.03	0.05	0.04	0.04

- a. NGPA base case projections appear in Table 3.
- b. NGPA base case consumption appears in Table 2.
- c. Changes in natural gas imports are equal to changes in natural gas consumption minus changes in natural gas domestic production. Numbers may not equal total because of rounding.
- d. The economic effects of the Senate and Gephardt bills are expressed in the form of changes from the CBO baseline macroeconomic forecast. This forecast was originally presented for the years 1984-88 in CBO, The Outlook for Economic Recovery (February 1983) and was updated for 1984-86 in CBO, The Economic and Budget Outlook: An Update, (August 1983). Since this baseline forecast only extends to 1988, values for 1989 and 1990 were extrapolated from the rates of growth presented for 1987 and 1988 in the baseline forecast. While the CBO baseline forecast is revised annually, these revisions are generally so small that they do not influence the effects of the two bills analyzed here. It should also be noted that these effects are presented as changes in levels, as opposed to rate of growth. This is particularly relevant in measuring inflation. An inflation effect of "x" percent in any one year means that the price level is x percent higher, not that the price level is growing x percent more rapidly. Changes in the rate of growth in the price level can be calculated by comparing the price level in any one year to its value in the previous year.

Growth would be slightly lower under the Senate bill than it would be under the NGPA in the later 1980s, as gas prices rise relative to the NGPA. By 1989 and 1990 the situation would be reversed since the economy would already have adjusted to marginal increases in gas prices that would occur a few years later under the NGPA. Inflationary effects would work in the opposite direction, and by 1990, the price level, whether measured by the Gross Domestic Product (GDP) <sup>6</sup>/ deflator or the Consumer Price Index (CPI), would be virtually unchanged.

### The Gephardt Proposal

An alternative approach to natural gas pricing is found in H.R. 2154, submitted by Congressman Gephardt. The Gephardt proposal would defer most of the pricing provisions of the NGPA by two years. Presuming its enactment on January 1, 1984, the bill would roll back the price allowed each category of gas under the NGPA to the allowed price on January 1, 1982, in effect cancelling the price increases sanctioned by current law over the past two years. In addition, it would limit the price of high-cost (section 107) and imported gas to 150 percent of the price allowed new (section 103) gas. Once reestablished at these levels, gas prices would be allowed to escalate at three-quarters of the inflation rate as measured by the GNP deflator or the rate of inflation in the energy price index as defined by the Bureau of Labor Statistics, whichever is smaller. (In contrast, the NGPA allows gas prices to increase by the full rate of inflation.) The Gephardt proposal then would allow those categories of gas that were to be decontrolled under the NGPA in January 1985 to be decontrolled in January 1987.

Average gas prices under the Gephardt proposal are estimated in Table 6. In 1985, city-gate gas prices (in constant dollars) are 31 cents, or 8 percent, lower under the Gephardt proposal when compared to the NGPA. This difference would disappear in 1987, when the Gephardt proposal would allow the decontrol slated for 1985 under the NGPA.

Table 7 depicts the results of a simulation of the Gephardt proposal. Within the natural gas market, the lower prices delivered by the Gephardt

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6. Gross domestic product (GDP) is a national income concept based on production within the geographic borders of a country. Gross national product (GNP) covers production by and incomes to citizens of a country no matter where they live. GDP is used in this report because changes in gas prices would not appreciably affect income earned from foreign sources.

TABLE 6. AVERAGE WELLHEAD AND CITY-GATE PRICES OF NATURAL GAS UNDER THE GEPHARDT PROPOSAL AND BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990

Year	Wellhead Prices		City-Gate Prices	
	In Current Dollars	In Constant Dollars	In Current Dollars	In Constant Dollars
1983	2.63	2.54	3.98	3.85
1984	2.30	2.14	3.79	3.54
1985	2.49	2.22	4.11	3.67
1986	2.61	2.22	4.42	3.76
1987	3.07	2.48	5.06	4.09
1988	3.23	2.49	5.34	4.12
1989	3.40	2.50	5.65	4.16
1990	3.56	2.50	5.98	4.20

NOTE: Base oil prices are presented in the center columns of Table 8 in Chapter III.

proposal would encourage gas consumption and discourage production, resulting in gas imports that would be over 33 percent higher than those under the NGPA by 1990. Domestic gas consumption would be higher by 0.1 trillion cubic feet and domestic production lower by 0.6 trillion cubic feet in 1990, accounting for the difference in gas imports. (Oil imports, on the other hand, would be slightly lower--about 65 thousand barrels per day in 1990--because of the substitution of gas for oil induced by lower gas prices.) But because the price of domestic gas would be restrained, the Gephardt bill would result in lower reserve additions over the 1984-1990 period--reserves would be about 5 trillion cubic feet lower than under the NGPA, and about 10.4 trillion cubic feet lower than under the Senate bill.

Inflation would be somewhat lower and real economic growth somewhat higher under the Gephardt proposal than under the NGPA until 1987, after which these differences disappear. These divergences reflect the different average gas price paths found in the Gephardt proposal and the NGPA base case. City-gate gas prices would be lower under Gephardt than under the NGPA, since the NGPA decontrols much of the nation's gas supply in 1985. In 1987, when the partial decontrol found in the Gephardt proposal would occur, city-gate gas prices would rise by about 9 percent in constant

TABLE 7. EFFECTS OF THE GEPHARDT PROPOSAL ON THE NATURAL GAS MARKET AND THE ECONOMY, ASSUMING BASE OIL PRICE ASSUMPTIONS, CALENDAR YEARS 1983-1990 (Expressed as changes from the NGPA base case, in trillions of cubic feet)

Effects	1983	1984	1985	1986	1987	1988	1989	1990
<b>Market Effects</b>								
Total reserves <u>a/</u>	0.0	-0.4	-2.3	-4.2	-4.6	-4.9	-4.9	-4.8
Reserve additions <u>a/</u>	0.0	-0.7	-1.7	-2.2	-0.9	-0.6	-0.5	-0.5
Consumption <u>b/</u>	0.0	0.3	0.4	0.4	0.2	0.2	0.2	0.1
Domestic production <u>a/</u>	0.0	-0.3	0.2	-0.3	-0.4	-0.3	-0.4	-0.6
Imports <u>a/ c/</u>	0.0	0.6	0.2	0.7	0.6	0.5	0.6	0.7
<b>Economic Effects <u>d/</u></b>								
Real Gross Domestic Product (GDP) (Percent change)	0.0	0.24	0.20	0.15	-0.06	-0.03	-0.01	-0.01
Price level (Percent change in GDP deflator)	0.0	-0.49	-0.48	-0.44	-0.08	-0.07	-0.05	-0.03
Price level (Percent change in Consumer Price Index)	0.0	-0.46	-0.51	-0.50	-0.18	-0.13	-0.10	-0.06

- a. NGPA base case projections appear in Table 3.
- b. NGPA base case consumption appears in Table 2.
- c. Changes in natural gas imports are equal to changes in natural gas consumption minus changes in natural gas domestic production. Numbers may not equal total because of rounding.
- d. The economic effects of the Senate and Gephardt bills are expressed in the form of changes from the CBO baseline macroeconomic forecast. This forecast was originally presented for the years 1984-88 in CBO, The Outlook for Economic Recovery (February 1983) and was updated for 1984-86 in CBO, The Economic and Budget Outlook: An Update, (August 1983). Since this baseline forecast only extends to 1988, values for 1989 and 1990 were extrapolated from the rates of growth presented for 1987 and 1988 in the baseline forecast. While the CBO baseline forecast is revised annually, these revisions are generally so small that they do not influence the effects of the two bills analyzed here. It should also be noted that these effects are presented as changes in levels, as opposed to rate of growth. This is particularly relevant in measuring inflation. An inflation effect of "x" percent in any one year means that the price level is x percent higher, not that the price level is growing x percent more rapidly. Changes in the rate of growth in the price level can be calculated by comparing the price level in any one year to its value in the previous year.

dollars. But the price difference between the Gephardt bill and the NGPA would disappear by 1990 because of the higher levels of gas imports under the Gephardt proposal.

## OTHER PROVISIONS

It should be noted that both the Senate and Gephardt proposals contain other provisions that would influence the conduct of natural gas markets. These concern the restrictions of "take-or-pay" provisions, "market-out" clauses, "contract carriage" status for pipelines, and other institutional reforms of the gas market. The precise effect of these provisions is speculative, since it is impossible to say with precision how many pipelines would choose to cut back on their take-or-pay obligations or how many end users or local distribution companies would terminate their arrangements with pipelines and deal directly with producers, using pipelines for transportation of the gas only, a role known as contract carriage. But while these provisions cannot be incorporated into econometric simulations as readily as changes in wellhead pricing, they are nonetheless important in restoring economic signals to the gas market, and for that reason are discussed here.

### Take-or-Pay

As discussed in Chapter I, many pipelines have signed contracts with producers that require them to pay for a certain volume of gas even if they cannot resell it. These provisions, known as take-or-pay, in effect transfer the risks associated with marketing gas from producers to pipelines.

The prevalence of take-or-pay provisions in high-cost gas contracts distorts gas markets by forcing pipelines to reduce purchases of relatively cheap gas rather than high-cost sources when consumption declines. Thus, average gas prices do not fall when consumption falls, as would be expected to happen in a competitive market. The Senate proposal would limit all pipelines' take-or-pay liabilities to 50 percent of their contractual liability in the first year following enactment, 60 percent in the second year, and 70 percent in the third year. Following the third year, all take-or-pay provisions would remain in force. Any gas for which a take-or-pay obligation exists but a pipeline declines to accept could be resold to any other purchaser for whatever price the market would bear.

Under the Gephardt proposal, take-or-pay clauses are restricted to 50 percent of their contract volume for three years, after which all take-or-pay provisions must be honored. Gas declined by pipelines under take-or-pay provisions could be resold up to the bills' price ceilings.

### Market-Out Options

Some natural gas contracts--predominantly those signed after the NGPA's passage--have market-out clauses, which allow a pipeline to cease receiving gas from a producer in the event that it cannot be sold. Under the Senate bill, a pipeline or a producer would be allowed to exercise his right to market out if the other party to the contract elected to begin phasing the contract price to the indicator level. In addition, if a producer decided to market out and find a new purchaser, he would have to continue to sell to the old purchaser until a new one could be found. Thus, a producer could not "shut in" his production and wait for market conditions to improve or for the price-phasing period to end. Similarly, a pipeline that markets-out would have to continue to accept gas from its old producer until a new one could be found.

Market out options under the Senate bill are also limited by a specified "right of first refusal." If, for example, a pipeline decided to market out of its contract and succeeded in finding a new supplier willing to sell at a lower price, the old producer would have the right to match the lower price and continue sales. Conversely, if a producer markets out in search of a better price, the pipeline adversely affected by the producer's actions would retain the right to match any offer made by another pipeline and, therefore, to continue accepting deliveries.

The Gephardt proposal would allow pipelines, but not producers, to market out. It would require, however, that pipelines market out of their highest priced gas supplies first. Moreover, if a pipeline did market out of a contract, it would be prohibited from paying a price equal to or higher than the price of the gas it had declined to buy. Sellers whose gas was refused by a pipeline under a market-out provision could resell it within the price guidelines found in the Gephardt bill, but would have to offer the pipeline the right of first refusal, the same procedure required by the Senate bill.

The right of pipelines to market out of their contracts could present difficulties for producers, however, since producers sometimes have only one pipeline at their field. Thus, if a pipeline refused to purchase a producer's gas, the producer could be, for all practical purposes, involuntarily "shut in"--that is, unable to sell its gas. To rectify this problem, both the Senate and Gephardt proposals would require pipelines that refused to accept a producer's gas under their market-out option to agree to deliver that gas to another pipeline for a reasonable fee.

## Contract Carriage

Pipelines are the only available vehicle for transporting natural gas overland. As recognized in the original Natural Gas Act of 1938, this gives them significant power over gas producers and consumers, since they can refuse to move gas from one point to another. Both the Senate and the Gephardt proposals would require pipelines to carry gas at the request of any producer or any other pipeline, so long as capacity was available and so long as doing so would not interfere with the pipeline's obligations to its existing customers. This transportation service, or contract carriage, would add a dimension of flexibility and competitiveness to gas markets by expanding the number of producers each potential end-use purchaser could do business with, and vice versa. The Senate bill would also extend this requirement, on a limited basis, to local distribution companies (which buy gas from pipelines and sell it to local users). If it met fairly rigorous criteria, a local gas user (such as an industrial facility), therefore, could negotiate directly with a producer and secure contract carriage all the way from the wellhead to the user's facility.

Contract carriage could become a contentious issue in determining how gas costs should be divided between residential and industrial users. In general, only industrial users are large enough to contract directly with producers. If pipelines and distribution companies lost industrial customers that elected to employ contract carriage, they could be forced to assign their fixed costs (that is, their pipeline costs and their contractual obligations to buy gas) to residential customers only. This would result in far higher residential gas bills. The Federal Energy Regulatory Commission (FERC) and state utility commissions could avoid this situation by incorporating these costs into the rates they compelled pipelines to charge for contract carriage.

## Limitations on Passthrough of Gas Costs

Both the Senate and Gephardt bills would allow FERC to limit the extent to which a pipeline could pass through its purchased gas costs to local distribution companies and final consumers. Under the NGPA, FERC may prohibit the passthrough of gas costs that, in its judgment, reflect fraud or abuse. The Senate bill would expand this authority, allowing FERC the discretion to prohibit full passthrough for gas delivered under new or renegotiated contracts whose price in any month is in excess of 110 percent of the indicator price defined by the bill. FERC would not have this discretion for gas costs resulting from contracts signed before the bill's enactment.

The Gephardt bill would give FERC the general authority to disallow costs that, in FERC's view, do not reflect an effort to "minimize amounts paid for natural gas." FERC would be charged with the continual review and public posting of all gas contracts in order to fulfill this responsibility.

#### Elimination of Indefinite Price Escalator Clauses

Many gas contracts contain clauses--known as "indefinite price escalators"--that, upon deregulation, tie the price of gas to some percentage of the price of oil, a refined petroleum product, or other gas prices in the area. If decontrol was enacted and these provisions remained in contracts, prices could suddenly rise above oil-equivalent levels. This potential "price contagion" would occur if some contracts specified gas prices at an unsupportable level (such as 110 percent of the price of distillate oil, equivalent to about \$8.00 per thousand cubic feet), and other contracts specified that gas be sold at a price equal to the highest price found in the area, thereby tying neighboring gas to this unsupportable price.

The Gephardt bill explicitly forbids the use of these indefinite price escalator clauses. The Senate bill does not mention them specifically but does limit the ability of pipelines to pass through gas costs in excess of 110 percent of the indicator price. The difference between the two bills in this regard, however, is slight. By allowing pipelines to phase down the price of gas above the price indicator and by allowing extensive market-out rights, the Senate bill would provide ample opportunities for pipelines to escape the effects of indefinite price escalator clauses if they so desired. Similarly, the market-out provisions found in the Gephardt bill could provide comparable relief. Thus, the explicit prohibition on indefinite price escalators found in the Gephardt bill is, to some extent, redundant.