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REGIONAL DISTORTIONS IN NATURAL GAS ALLOCATIONS: A LEGAL AND ECONOMIC ANALYSIS

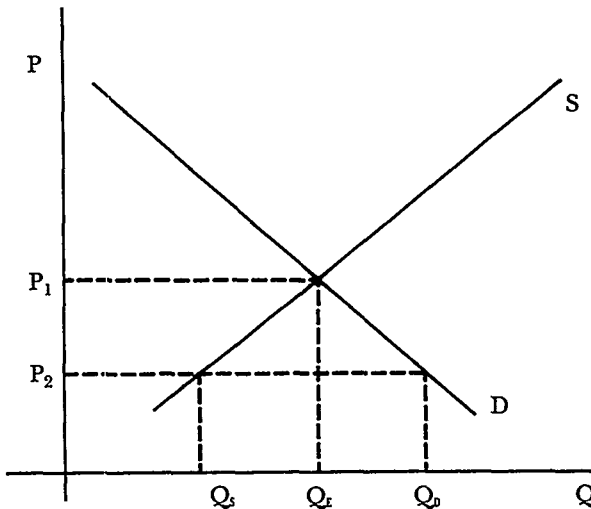
JEFFREY L. HARRISON† AND JOHN P. FORMBY‡

All students of economics are taught that a government controlled ceiling price set below the market clearing price will generate an excess of demand relative to supply.¹ When a ceiling price is established, price ceases to perform as a rationing mechanism and some means of administering the regulation-induced shortage must be developed. The

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1. The traditional model is as follows: D in the graph below shows the quantities (Q) that consumers are willing and able to purchase at each price (P). Curve S shows the quantities available for sale at each price. At price P_1 the quantity demanded is equal to that supplied (Q_E). At price P_2 (the ceiling price) the quantity demand (Q_D) exceeds that supplied (Q_S). This is an excess of demand relative to supply. In the graph this shortage is measured by $Q_D - Q_S$. Only at price P_1 is the market cleared. At this price the voluntary decisions of buyers are exactly matched by those of sellers and quantity demanded and quantity supplied are equal.



regulation of natural gas has followed this predictable sequence² of events. The regulation of the field price³ of natural gas began in 1954 with the United States Supreme Court decision in *Phillips Petroleum Co. v. Wisconsin*.⁴ Ceiling prices were first set in 1965.⁵ Until 1970 shortages resulting from the use of ceiling prices were relatively mild.⁶ By the early 1970's, however, the shortages predicted by elementary economic models began to appear.⁷ The regulatory response has been two-fold. First, the Federal Power Commission (FPC)⁸ has permitted the price to rise—but never to the market clearing level.⁹ Second, the emergence of serious shortages has been met with the imposition of curtailment policies¹⁰ having the somewhat contradictory goals of allocating natural gas into its highest valued use and distributing available gas supplies in a fair and equitable manner.¹¹

The predicted shortage that developed as a result of the imposition of ceiling prices on the field price of natural gas has been well documented.¹² Regulation of this type is also generally accompanied by unintended and difficult-to-predict consequences that may be as undesirable as and more troublesome than the shortage itself. For example, the continuation of World War II rent ceilings in the New York

2. Deregulation of natural gas prices in some form seems destined to be a part of any comprehensive energy policy. Legislative maneuvering suggests, however, that this "deregulation" is not likely to be complete. A deregulation bill whose passage seemed imminent as of this writing will not apply to all gas, may be temporary, will entail the regulation of currently unregulated gas and, in any case, will not take complete effect for several years. See *Prospects for Energy Bill Brighten but Tough Fights Still Seen Ahead*, Wall St. J., Apr. 24, 1978, at 3, col. 1.

3. The field price refers to the price paid to gas producers at the wellhead. The principal buyers at this stage of the natural gas industry are interstate pipeline companies.

4. 347 U.S. 672 (1954).

5. Area Rate Proceeding, 34 F.P.C. 159 (1965).

6. In reality shortages probably did begin to appear soon after price ceilings were imposed. MacAvoy, *The Regulation-Induced Shortage of Natural Gas*, 14 J.L. & ECON. 167 (1971). According to MacAvoy, the relative mildness of these early shortages was probably due to the small response of demand and supply to the ceiling prices. *Id.* at 168.

7. Breyer & MacAvoy, *The Natural Gas Shortage and the Regulation of Natural Gas Producers*, 86 HARV. L. REV. 941, 965 (1973).

8. Effective October 1, 1977, the duties of the FPC were assigned to the Federal Energy Regulatory Commission (FERC).

9. See text accompanying notes 86-95 *infra*.

10. See text accompanying notes 111-40 *infra*.

11. The goals of equity and efficiency often conflict in setting economic policy. For example, if all potential users bid for scarce natural gas, then those who place the highest economic value on gas will receive it. Gas might end up being used as a boiler fuel and individual home owners may receive less than what could be perceived as a fair share of the available gas. The "equity versus efficiency" problem permeates economic policy. See A. OKUN, *EQUALITY AND EFFICIENCY: THE BIG TRADEOFF* 1-5 (1975).

12. See, e.g., Breyer & MacAvoy, *supra* note 7.

housing market led apartment owners to systematically neglect maintenance and upkeep. The unintended result of the rent ceiling was a severe deterioration in the quality of housing with disastrous long-run consequences.¹³ Similarly, regulation of new drug applications by the Food and Drug Administration under the 1962 amendments to the Food, Drug and Cosmetic Act¹⁴ probably contributed to a significant decline in innovation in the drug industry, which in turn has led to long and possibly unnecessary delays in the introduction of therapeutic and life-saving drugs.¹⁵ The regulation of natural gas has also generated unforeseen and unintended consequences, the most important of which are serious regional distortions in natural gas prices and availabilities. These distortions can create unemployment, raise production costs, increase reliance on imported energy sources, and influence patterns of regional economic growth. As the data presented below indicate, the Southeast and, in particular, the Carolinas have been the most disadvantaged by these distortions.

The unintended consequences flow directly from the establishment of price ceilings and attempts to administer the resultant shortage. A number of economic and legal factors have intermingled to create the current predicament. In order to understand fully the nature of the problem, these factors must first be untangled. It is to the task of untangling that the first sections of this article are devoted, while the latter sections expand on the dangers inherent in the current regulatory scheme.

I. THE STRUCTURE AND COMPETITIVE POTENTIAL OF THE INDUSTRY

A. Industry Structure

There are three stages of productive activity in the natural gas industry. At the exploration and production stage there are thousands of gas producers.¹⁶ The gas comes from one of two sources. The first,

13. Moorhouse, *Optimal Housing Maintenance Under Rent Control*, 39 S. ECON. J. 93, 101 (1972).

14. 21 U.S.C. § 355 (1976).

15. S. PELTZMAN, REGULATION OF PHARMACEUTICAL INNOVATION 81-82 (1974).

16. Since crude oil and natural gas are, in part, joint products, the exact number of producers is somewhat difficult to determine. One recent study suggests that there are approximately 30,000 oil and gas producers. This includes thousands of small gas producers selling only in intrastate markets. AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH, NATURAL GAS DEREGULATION LEGISLATION, LEGISLATIVE ANALYSIS NO. 13, 93D CONG. 15 (1973). Perhaps a more reliable indicator of the number of major sellers is provided by a 1970 study by

dissolved natural gas, is associated with oil production and is essentially a joint product with crude oil. The second source is non-associated gas.¹⁷ In terms of searching for new oil and gas the distinction between associated and nonassociated is somewhat clouded by the inability of producers in most cases to know what will be discovered by exploratory drilling. New natural gas reserves from either source will remain available for some time but can be obtained by producers only at higher and higher costs.¹⁸ The primary determinants of the critically important new gas reserves are the price of gas on new contracts at the wellhead, the costs of exploration and development, and expected future wellhead prices.

Transmission is the second stage of the natural gas industry. The interstate natural gas pipelines purchase gas at the wellhead, transport it to consuming regions and sell it to local distributors. There are a total of 106 regulated interstate pipelines. Thirty-three of these, branching out into all sections of the country, are designated as major pipelines.¹⁹ There is a strong element of natural monopoly²⁰ in natural gas transmission by pipeline, the origins of which are the enormous economies of scale associated with the size (diameter) of a pipeline.²¹ This natural monopoly position, however, is not complete for two reasons. First, substitutes for natural gas are available, albeit somewhat imperfect ones.²² Second, the density of population and the industrial structure of regional economies have made it economically feasible and profitable to construct two or more pipelines into some areas. As a result, some states are not served by a major pipeline at all (for example, Maine); other states are served by only one (for example, North Carolina); others are served by two (for example, Georgia); and still others are

the FPC of gas producers selling to interstate pipelines; according to this study there were 3,738 producers selling in the interstate market. FEDERAL POWER COMMISSION, SALES BY PRODUCERS OF NATURAL GAS TO INTERSTATE PIPELINE COMPANIES 1970, at vi (1972).

17. Hausman, *Project Independence Report: An Appraisal of U.S. Energy Needs up to 1985*, 6 BELL J. ECON. 517, 529 (1975).

18. See note 33 *infra*.

19. AMERICAN ENTERPRISE INSTITUTE FOR PUBLIC POLICY RESEARCH, *supra* note 16, at 15.

20. A natural monopoly is defined as an economic situation in which the long-run unit costs of production continuously decline as output expands. In technical economic terms, the economies of scale in production are inexhaustible. As a consequence, a single business firm is the most efficient means of producing the needed output. A free market would tend to result in a single seller in the industry; hence, a natural monopoly is said to exist.

21. P. GARFIELD & W. LOVEJOY, JR., PUBLIC UTILITY ECONOMICS 174-78 (1964).

22. The substitutability of other fuels for natural gas depends on technological factors and the amount of time available to energy consumers to shift to alternate fuels. In some uses, natural gas is a technologically superior energy source and would be difficult to replace regardless of the time available for accomplishing the substitution.

served by a relatively large number of pipelines (for example, New York).²³ Competition among natural gas pipelines and competition between natural gas and substitute fuels blunts the edge of natural monopoly by pipelines but does not eliminate the need for regulation.²⁴

Pipelines obtain natural gas by signing long-term contracts with producers (typically for terms of ten to twenty years). Until the late 1960's gas was generally available. The gas shortage took the form of a deficiency of reserves relative to production,²⁵ and regulation resulted in prices on new contracts that were not much different from prices on earlier contracts. In the late 1960's, however, reports that some pipelines were experiencing difficulty securing long-term contracts at regulated prices began to surface.²⁶ In the early 1970's serious shortages began to materialize and it was recognized that ceiling prices were at fault.²⁷ As a result of these developments, regulatory authorities permitted several sizable price adjustments on contracts for newly discovered gas.²⁸ As a consequence there has been a substantial and widening disparity between the average price of natural gas at the wellhead and the marginal rate on new contracts. In 1975 the marginal price was three and one-half times the average price.²⁹ This marked difference in price, however, is not visible to final users or even to local distribution firms because the FPC regulates pipelines in such a fashion that prices to local distributors are an average of new and old contract prices.³⁰

Local distribution is the final stage in the natural gas industry. Distribution takes place through local natural gas utilities which purchase gas from pipelines at wholesale prices set by the FPC and

23. J. MULHOLLAND & D. WEBBINK, ECONOMIC REPORT: CONCENTRATION LEVELS AND TRENDS IN THE ENERGY SECTOR OF THE U.S. ECONOMY, STAFF REPORT TO THE FEDERAL TRADE COMMISSION 166 app. A (1974).

24. The rationale for regulating natural monopoly is straightforward. Since one firm is the most efficient way of supplying the market, *see* note 20 *supra*, competition cannot be relied upon to generate the results normally associated with competitive free markets. The natural monopolist will have the power to raise price and restrict output. The monopolist may also have the power to regulate the quality of service and to discriminate in terms of price, service, or both. The regulation of natural monopoly typically focuses on prices, profits and the quality of service.

25. S. BREYER & P. MACAVOY, ENERGY REGULATION BY THE FEDERAL POWER COMMISSION 73 (1974).

26. *Id.*

27. *Id.*

28. *See* text accompanying notes 86-95 *infra*.

29. AMERICAN GAS ASSOCIATION, GAS FACTS 1975, at 110 (1975).

30. This practice is known as "rolling-in" and has become an essential feature of natural gas policy in the 1970's. Under the rolling-in policy, interstate pipelines sell gas to local distributors at a price, exclusive of transport cost, just equal to its average cost. Since natural gas prices have risen substantially, the rolled-in cost is substantially lower than marginal cost. *See* R. MANCKE, THE FAILURE OF U.S. ENERGY POLICY 119-31 (1974).

deliver it to residential, commercial and industrial users at retail prices regulated by state utility commissions. There is a strong element of natural monopoly at the local distribution stage. Because there is virtually no vertical integration of pipelines into local distribution, it might seem that the problems of monopoly and regulation at the local distribution stage could be easily separated from the natural gas shortages and the regional distortions caused by FPC wellhead price control and curtailment policies. Such a separation would have been logical and valid before the harsh winter and severe shortages of 1976-1977. At the present time, however, the designation and creation of "emergency gas"³¹ and the development of local allocation policies with respect to this gas require that regulatory distribution policies at the local level be considered in any discussion of the regional distortions caused by the regulation of the natural gas industry.

B. *Competitive Potential*

There is general agreement among economists who have studied the matter in depth that, in the absence of regulation, the natural gas industry at the exploration and production stage would behave in a fashion analogous to a competitive³² increasing-cost industry.³³ In fact, effective competition in energy markets was characteristic of the 1950's and 1960's. The structural characteristics of the natural gas industry led to workable competition between gas producers in both the interstate and intrastate markets.³⁴ Additionally, natural gas was in sharp competition with other fuels both in residential and industrial markets.³⁵ Some significant imperfections in energy markets did exist—most notably in the form of import quotas on foreign petroleum and monopoly elements in the transmission and local distribution of natural gas. On the whole, however, natural gas, petroleum and coal sought to capture many of the same markets and competitive free enterprise predominated.³⁶

31. See text accompanying notes 141-60 *infra*.

32. See, e.g., L. COOKENBOO, JR., COMPETITION IN THE FIELD MARKET FOR NATURAL GAS (1958); P. MACAVOY, PRICE FORMATION IN NATURAL GAS FIELDS 4 (1962); E. MITCHELL, U.S. ENERGY POLICY: A PRIMER 53-54 (1974); E. NEUNER, THE NATURAL GAS INDUSTRY (1960).

33. An increasing cost industry is defined as one in which additional output can be produced only at an increasing per-unit cost. Since natural gas is a fossil fuel, the quantity available for discovery and exploitation is fixed. The gas most easily discovered has already been developed. New reserves are more difficult and costly to locate and develop.

34. P. GARFIELD & W. LOVEJOY, *supra* note 21, at 321-22.

35. *Id.* at 315.

36. Competition between natural gas and coal has manifested itself outside the marketplace as representatives of the coal industry have often intervened in FPC hearings concerning pipeline

II. CREATING THE SHORTAGE

A. *Phillips Petroleum Co. v. Wisconsin*

The beginning of the current shortage of natural gas in the United States is generally traced³⁷ to the Supreme Court's decision in *Phillips Petroleum Co. v. Wisconsin*.³⁸ *Phillips* arose as an appeal by the State of Wisconsin from an FPC decision³⁹ that the Commission did not have jurisdiction, under the Natural Gas Act of 1938,⁴⁰ to regulate the rates at which independent natural gas producers sold to interstate pipeline companies. The FPC decision was reversed by the Court of Appeals for the District of Columbia Circuit, which held that the Commission did have this authority,⁴¹ and the Supreme Court affirmed.⁴²

The issue faced by the Court was whether an independent producer of natural gas was a "natural gas company" and, therefore, subject to FPC regulation under section 4 of the Natural Gas Act.⁴³ Section 4 authorizes the Commission to regulate "rates and charges made, demanded, or received by any natural-gas company for or in connection with the transportation or sale of natural gas subject to the jurisdiction of the Commission."⁴⁴ The Act defines "natural-gas company" as "a person engaged in the transportation of natural gas in interstate commerce, or the sale in interstate commerce of such gas for resale."⁴⁵ There seemed to be little question that if these were the only relevant provisions, Phillips Petroleum Company, the independent producer, would have fallen within the scope of FPC authority.⁴⁶ The problem area was found in section 1(b), the general jurisdictional section of the Act, which provides that the Act

shall apply to the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or

rate structures. The coal industry has consistently opposed changes that would enable natural gas to compete more effectively in industrial fuel markets. *Id.* at 315-16.

37. See, e.g., Breyer & MacAvoy, *supra* note 7; MacAvoy, *supra* note 6.

38. 347 U.S. 672 (1954).

39. *Phillips Petroleum Co.*, 10 F.P.C. 246 (1951).

40. 15 U.S.C. §§ 717-717w (1976).

41. *Wisconsin v. FPC*, 205 F.2d 706 (D.C. Cir. 1953).

42. 347 U.S. at 685.

43. 15 U.S.C. § 717c (1976).

44. *Id.* § 717c(a).

45. *Id.* § 717a(6).

46. The sale was a sale in interstate commerce whether or not the gas crossed the state line prior to being sold to the interstate pipeline. 347 U.S. at 677 (citing *Interstate Natural Gas Co. v. FPC*, 331 U.S. 682, 687-89 (1947)).

any other use, and to natural gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas or to the local distribution of natural gas or to the facilities used for such distribution or to the production or gathering of natural gas.⁴⁷

Phillips Petroleum Company and the FPC agreed that an independent producer of natural gas fell within the exemptions found in the latter half of this provision.⁴⁸ Specifically, Phillips contended that its sales were a part of the "production and gathering" process and not subject to FPC regulation.⁴⁹

The Supreme Court flatly rejected this argument, placing primary reliance on its earlier decision in *Interstate Natural Gas Co. v. FPC*.⁵⁰ In *Interstate* the Court had held that sales made by natural gas producers to pipeline companies with markets in other states were not within the section 1(b) production and gathering exclusion.⁵¹ According to the *Interstate* Court, once the sale to the pipeline company was consummated, the production and gathering process was completed.⁵² Petitioners in *Phillips* attempted to distinguish *Interstate* on the basis of the affiliation of the producer-sellers in *Interstate* with an interstate pipeline and the absence of such an affiliation in their own case.⁵³ The Court in *Phillips*, however, noted that the interstate pipeline affiliation in *Interstate* was not a decisive factor. Instead, its earlier decision was based "on the broader ground that sales in interstate commerce for resale by producers to interstate pipelines do not come within the 'production or gathering' exemption."⁵⁴ Justice Minton, writing for the majority, stressed that the exceptions in section 1(b) were to be "strictly construed"⁵⁵ and that the production and gathering exemption extended only to the "physical activities, facilities, and properties used in the production and gathering of natural gas."⁵⁶

The Court also noted that the legislative history of the Act indicated that its enactment represented an attempt by Congress to plug the gaps in the regulation of natural gas left by a series of decisions holding

47. 15 U.S.C. § 717(b) (1976).

48. 347 U.S. at 677.

49. *Id.*

50. 331 U.S. 682 (1947).

51. *Id.* at 692.

52. *Id.*

53. 347 U.S. at 680-81.

54. *Id.*

55. *Id.* at 679 (quoting *Interstate Natural Gas v. FPC*, 331 U.S. at 691).

56. *Id.* at 678 (citing *Colorado Interstate Gas Co. v. FPC*, 342 U.S. 581, 602-03 (1945)).

state regulatory measures to be unconstitutional.⁵⁷ Taking a broad view of the goals of Congress the Court concluded:

Regulation of the sales in interstate commerce for resale made by a so-called independent natural-gas producer is not essentially different from regulation of such sales when made by an affiliate of an interstate pipeline company. In both cases, the rates charged may have a direct and substantial effect on the price paid by the ultimate consumers. Protection of consumers against exploitation at the hands of natural-gas companies was the primary aim of the Natural Gas Act.⁵⁸

B. Price Ceilings

Immediately after *Phillips*, the FPC issued orders governing the filing of rate schedules⁵⁹ by independent producers and requiring them to apply for certificates of public convenience and necessity.⁶⁰ The increase in the workload of the FPC was massive. For the twelve year period prior to *Phillips*, the Commission had received a total of 1,244 applications for certificates. In the year immediately after *Phillips*, there were over 6,000 applications.⁶¹ Prior to *Phillips* the Commission processed an average of 700 gas rate filings per year. In the one year period after *Phillips*, the Commission received not only 709 filings from interstate pipeline companies, but an additional 11,000 filings from independent producers.⁶² While the Commission initially attempted to deal with this regulatory burden by reviewing each rate on the traditional cost of service basis, as early as 1956 it included in its *Annual*

57. *Id.* at 682-83. These decisions held that natural gas moving in interstate commerce was beyond the scope of state regulation. See, e.g., *Public Utils. Comm'n. v. Attleboro Steam & Elec. Co.*, 273 U.S. 83 (1927); *Missouri ex rel. Barrett v. Kansas Natural Gas Co.*, 265 U.S. 298 (1924).

58. 347 U.S. at 685. The Court also took note of several unsuccessful attempts by legislators to amend the Act to specifically exempt natural gas producers from federal regulation and refused to bring about the same result "by a strained interpretation of the existing statutory language." *Id.* In response to *Phillips*, producers of natural gas mounted an intensive lobbying effort aimed at passage of a bill exempting them from coverage of the Natural Gas Act. This campaign was successful in Congress, but the bill was vetoed by President Eisenhower. See Kitch, *Regulation of the Field Market of Natural Gas by the Federal Power Commission*, 11 J.L. & ECON. 243, 256 (1968). In his dissenting opinion, Justice Douglas contended that the legislative history of the Act was not helpful because independent producers were not even considered in the hearings and debates prior to passage. 347 U.S. at 688 (Douglas, J., dissenting). For a persuasive argument that the legislative history of the Natural Gas Act provides very little support for the majority opinion in *Phillips*, see Note, *Legislative History of the Natural Gas Act*, 44 GEO. L.J. 695 (1956).

59. Order No. 174-A, 13 F.P.C. 1255 (1954), *appeal dismissed*, *Magnolia Petroleum Corp. v. FPC*, 236 F.2d 785 (5th Cir. 1956), *cert. denied*, 352 U.S. 968 (1957).

60. *Id.*

61. 35 F.P.C. ANN. REP. 87 (1955); see Collole, *General Considerations: A Nation's Natural Gas Pains*, 44 GEO. L.J. 555, 559-60 (1956).

62. 35 F.P.C. ANN. REP. 108 (1955).

Report a recommendation that the Natural Gas Act "be amended to provide for . . . a standard for pricing or evaluating natural gas as a commodity which would not require use of a rate base or traditional utility ratemaking principles."⁶³

The requested legislative relief was not forthcoming, and in 1960 the Commission announced its intention to deviate from the consideration of individual producer rates in favor of establishment of ceiling rates for areas encompassing several producers.⁶⁴ In December 1960 proceedings were instituted to determine the just and reasonable area-wide rate for producers in the Permian Basin area.⁶⁵ The Commission cited both the increased administrative burden brought on by *Phillips*⁶⁶ and the unworkability of the cost of service method of rate evaluation as reasons for this change.⁶⁷ The outcome of this extensive investigation by the agency was the issuance, in 1965, of a decision prescribing area-wide price ceilings, based on composite cost data, for Permian Basin producers.⁶⁸

The pricing scheme designed by the Commission called for a system of dual prices. One area maximum price was established for natural gas produced from wells dedicated to interstate commerce after January 1, 1961. A lower rate was established for all other gas produced in the area.⁶⁹ Thus, while the advent of area price ceilings had within it the seeds from which future shortages were to grow, the Commission clearly was cognizant of the possible impact of price ceilings and attempted to use price as an incentive for exploration and production.

In 1968, the Supreme Court sustained the use of area-wide price ceilings in the *Permian Basin Area Rate Cases*.⁷⁰ The Court found that the Commission had not exceeded its statutory or constitutional authority⁷¹ and that the actual rates were within the "zone of reasonableness."⁷² Justice Harlan, writing for the majority, noted that natural gas

63. 36 F.P.C. ANN. REP. 19 (1956).

64. Statement of General Policy No. 61-1, 24 F.P.C. 818 (1960).

65. Area Rate Proceeding, 24 F.P.C. 1121 (1960).

66. Statement of General Policy No. 61-1, 24 F.P.C. 818 (1960).

67. Phillips Petroleum Co., 24 F.P.C. 537, 542-46 (1960), cited in Statement of General Policy No. 61-1, 24 F.P.C. 819, 819 (1960).

68. Area Rate Proceeding, 34 F.P.C. 159 (1965).

69. *Id.* at 185-88.

70. 390 U.S. 747 (1968).

71. *Id.* at 768-90.

72. *Id.* at 790-813; see *FPC v. Natural Gas Pipeline Co.*, 315 U.S. 575, 585 (1942), cited in *Permian Basin Area Rate Cases*, 390 U.S. at 767, 797.

producers were not amenable to the typical cost of service rate-making schemes applied in other areas.⁷³ Accordingly, he observed:

Producers of natural gas cannot be usefully classified as public utilities. They enjoy no franchise or guaranteed areas of service. They are intensely competitive vendors of a wasting commodity they have acquired only by costly and unrewarded search. . . . The value to the public of the services they perform is measured by the quantity and character of the natural gas they produce and not by the resources they have expended in its search⁷⁴

In addition to recognizing the difficulties involved in the application of a rigid cost of service technique of rate determination, the Court also gave its approval to a dual rate scheme designed to encourage future supplies.⁷⁵ In this context, Justice Harlan noted, "The Commission may, within this zone [of reasonableness], employ price functionally in order to achieve relevant regulatory purposes; it may, in particular, take fully into account the probable consequences of a given price level for future programs of exploration and production."⁷⁶

C. *The Current Shortage: The OPEC Effect*

As already noted, in the period prior to 1970, any shortages induced by price ceilings were quite small primarily due to the unresponsiveness of both supply and demand to prices set below the unregulated level.⁷⁷ In the early years of natural gas regulation retail prices of gas often declined due to economies of scale in transportation and competition with other fuels.⁷⁸ Problems began to appear, however, in the late 1960's and early 1970's. First, the Clean Air Act of 1967⁷⁹ induced massive shifts in energy consumption from coal to oil and gas.⁸⁰ Second, the OPEC nations began to exert market power over the world price of crude petroleum. The Arab oil boycott and subsequent cartel action resulted in a 350% increase in world oil prices in a short period

73. 390 U.S. at 756.

74. *Id.* at 756-57. The Court also noted the massive increase in workload that resulted from its opinion in *Phillips*. *Id.* at 758.

75. *Id.* at 796-97.

76. *Id.* at 797.

77. MacAvoy, *supra* note 6, at 168. See also Kahn, *Economic Issues in Regulating the Field Price of Natural Gas*, 50 AM. ECON. REV. 504 (1960), cited in MacAvoy, *supra* note 6, at 168 n.3.

78. P. GARFIELD & W. LOVEJOY, *supra* note 21, at 299.

79. 42 U.S.C. § 1857 (1970).

80. Krutilla & Page, *Energy Policy from an Environmental Perspective*, in ENERGY SUPPLY AND GOVERNMENT POLICY 76 (R. Kalter & W. Vogely eds. 1976). See also J. MADDOX, BEYOND THE ENERGY CRISIS 91-92 (1975).

of time.⁸¹ FPC controls on natural gas restrained prices at a level that made it a tremendous bargain relative to petroleum fuels. The disparity in the price of natural gas relative to substitute fuels induced a severe shortfall in natural gas.⁸²

Not all of the effects of the controls have been bad. Some groups have benefited enormously. Economic rents have been extracted from gas producers and passed on to natural gas users in the form of consumer surplus. In nontechnical but less accurate terms, real income has been transferred from gas producers to gas users.⁸³ Another major beneficiary group has been OPEC. The shortfall in natural gas caused an artificial increase in the demand for substitute fuels including petroleum, petroleum gases, liquefied natural gas and synthetic gases. The OPEC nations are a major source of supply of these natural gas substitutes. The controls on the domestic petroleum industry channeled much of this increase in demand for natural gas substitutes directly to OPEC. As a result, imports rose and OPEC benefited.⁸⁴

The price differential between petroleum and natural gas reveals something about the impact of OPEC on the natural gas industry. In the absence of regulation, the price of natural gas would tend to gravitate to an equilibrium price per BTU energy equivalent comparable to that of petroleum. Owing to the technological and environmental superiorities of one fuel over the other, strict parity is unlikely; the differences, however, would not be sizable. This implies that in the absence of regulation the price of natural gas would be considerably higher.⁸⁵

81. T. TIETENBERG, *ENERGY PLANNING AND POLICY* 26 (1976).

82. The growth in the shortage was rapid. See R. MANCKE, *SQUEAKING BY: U.S. ENERGY POLICY SINCE THE EMBARGO* 10 (1976).

83. In an unregulated competitive market, price will adjust to be the cost of production of the highest cost producer of natural gas. Those producers with highly productive gas wells and low costs receive a return that economists call economic rent. By holding prices below the market clearing level, rents are reduced and passed on to consumers in the form of lower prices. Thus, the real income of gas producers is lowered and the real income of consumers is raised. See R. MANCKE, *supra* note 30, at 48-55.

84. It is well established that the domestic energy policy adopted largely in response to OPEC has had the effect of shifting demand from domestic energy to imports. Much of the imported energy comes from OPEC countries. The entitlements program is the primary reason for this ironic result. See Hall & Pindyck, *The Conflicting Goals of National Energy Policy*, PUB. INTEREST, Spring 1977, at 3, 4-5.

85. Prior to 1976, natural gas was estimated to be selling for less than one-third the price of a comparable BTU of a close substitute, residual fuel oil. T. TIETENBERG, *supra* note 81, at 136 n.7. The rise in the ceiling price of newly discovered gas to \$1.42, see text accompanying notes 86-94 *infra*, eliminated much of this disparity. This increase, however, still left the relative price of natural gas below substitute fuels. See *Revised Rates for New Natural Gas: Hearings Before the Special Subcomm. on Oil and Natural Gas Production and Distribution of the Senate Comm. on Commerce, 94th Cong., 2d Sess. 76 (1976)* (statement of A.V. Jones); *Federal Power Commission*

The FPC and the courts⁸⁶ have not ignored the OPEC effect. In mid-1974, the Commission instituted a uniform national rate for sales of natural gas produced from wells commenced on or after January 1, 1973, and new dedications of natural gas to interstate commerce on or after the same date.⁸⁷ The new national rate of forty-two cents per thousand cubic feet (Mcf) was from 20 to 110% higher than the area-wide rates it replaced.⁸⁸ On an energy equivalent basis, however, these price increases were far less than OPEC petroleum price rises.⁸⁹ Six months after the adoption of a nationwide rate, a twenty percent price increase to fifty cents per Mcf was approved.⁹⁰ In July 1976, the Commission approved an increase in the base price of new dedications to \$1.42 per Mcf.⁹¹ While the price increases on new gas from 1974 through 1976 have been great, they still have not eliminated the disparity in the prices of natural gas and substitute fuels⁹² and, consequently, shortages persist.

It deserves emphasis that the higher uniform national rates do not apply to all natural gas but only to new dedications. "New gas" trades at one price and "old gas" at another. Actually, a multi-tiered pricing system now exists. Gas newly sold on the interstate market (after January 1, 1975) has a base rate of \$1.42 per Mcf. Gas discovered or committed between January 1, 1973, and January 1, 1975, has a base of 93 cents per Mcf and "old gas," discovered or committed prior to January 1, 1973, sells for 29.5 cents per Mcf.⁹³ Most of the gas flowing into the interstate network is old gas.⁹⁴ Consequently, the rolled-in price is substantially below the \$1.42 rate on newly discovered gas.

The problem that continues to plague the Commission is one of reconciling the short-run interests of consumers in lower prices with

Biennial Rate Decision: Opinion No. 770: Hearings Before the Subcomm. on Oversight and Investigation of the House Comm. on Interstate and Foreign Commerce, 94th Cong., 2d Sess. 35 (1976).

86. See, e.g., *Mobil Oil Corp. v. F.P.C.*, 417 U.S. 283 (1974).

87. *Just and Reasonable National Rates for Sales of Natural Gas*, 51 F.P.C. 2212 (1974).

88. Calculations by authors from data in *id.* at 2281.

89. See note 85 *supra*.

90. *Just and Reasonable National Rates for Sales of Natural Gas*, 52 F.P.C. 1604 (1974). The 50 cent ceiling actually provided a base for further increases. The Commission approved automatic increases of one cent per Mcf per year. *Id.* at 1649.

91. Opinion No. 770, 10 FED. POWER SERV. (Matthew-Bender) 5-293 (1976). The base of \$1.42 is permitted to increase at the rate of one cent per Mcf per quarter.

92. See note 85 *supra*.

93. 18 C.F.R. § 2.56a, b (1977).

94. *Revised Rates for New Natural Gas: Hearings Before the Special Subcomm. on Oil and Natural Gas Production and Distribution of the Senate Comm. on Commerce, supra* note 85, at 67.

their long-term interests in increased production. In a statement accompanying its 1974 order establishing the forty-two cent national rate the Commission described its quandary:

[T]he continuing and deepening natural gas shortage and critical shortages of other energy sources which have resulted in a national energy emergency requires that this Commission take all prudent steps to insure that the rates allowed for natural gas sold in interstate commerce are adequate to bring forth the requisite supplies to fulfill reasonable demand while protecting the "consumers against exploitation at the hands of natural-gas companies." Thus, the Commission faces a formidable task; establishing rates high enough to provide the economic incentive for the unprecedented task of finding enormous volumes of new gas but not so high that the natural gas consumer is exploited during the time of shortage.⁹⁵

III. ADMINISTERING THE SHORTAGE

A. FPC Authority

Having abandoned price as a rationing mechanism, the FPC was faced with the task of determining who would receive the increasingly scarce supplies of natural gas. On April 15, 1971, the Commission issued Order No. 431⁹⁶ directing natural gas pipeline companies to develop and file plans for curtailing deliveries of gas. In the order, the Commission offered its guidelines on how the plans should be structured and which users should be deemed highest priority.⁹⁷ More important at this time, however, was the question whether the FPC was authorized to apply its curtailment standards to direct sales of natural gas to final users. As was noted earlier, the Commission's authority in the area of rates extends only to gas sold for resale. The critical issue was whether the Commission's curtailment authority extended beyond its authority to regulate prices. This question was answered in the affirmative in *FPC v. Louisiana Power & Light Co.*⁹⁸

Louisiana Power and Light Company was a direct customer of United Gas Pipe Line Company (United). United's curtailment plan did not distinguish between customers buying for resale and those

95. Just and Reasonable National Rates for Sales of Natural Gas, 51 F.P.C. 2212, 2217-18 (1974) (footnotes omitted).

96. 45 F.P.C. 570 (1971).

97. *Id.* at 572.

98. 406 U.S. 621 (1972).

purchasing for direct consumption.⁹⁹ Louisiana Power and Light objected to the plan, arguing that, under section 1(b) of the Natural Gas Act, its status as a direct customer prohibited the FPC from directing curtailment of its gas deliveries.¹⁰⁰ Section 1(b), it will be recalled, is the general jurisdictional provision of the Act, which extends FPC authority to "the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption . . . and to natural gas companies engaged in such transportation or sale."¹⁰¹ The final proviso of the section adds that jurisdiction "shall not apply to any other transportation or sale of natural gas."¹⁰² Louisiana Power and Light argued that sales to direct customers were exempt under this latter proviso.¹⁰³ A unanimous Court, relying on the legislative history of the Act¹⁰⁴ and its 1947 decision in *Panhandle Eastern Pipe Line Co. v. Public Service Commission*,¹⁰⁵ rejected this interpretation of section 1(b).¹⁰⁶ The Court viewed section 1(b) as providing for three independent areas of FPC jurisdiction, including " (1) the transportation of natural gas in interstate commerce; (2) its sale in interstate commerce for resale; and (3) natural gas companies engaged in such transportation or sale."¹⁰⁷ Accordingly, the Court concluded that while "the Act's application to 'sales' is limited to sales of interstate gas for resale, the Act applies to interstate 'transportation' regardless of whether the gas is ultimately sold retail or wholesale."¹⁰⁸

Having dispensed with the problem of jurisdiction, the Court approved the equal treatment of direct and resale customers, citing section 4(b) of the Act.¹⁰⁹ Section 4(b) is the substantive provision of the Act that is applicable to curtailment plans and directs:

No natural-gas company shall, with respect to any transportation or sale of natural gas subject to the jurisdiction of the Commission, (1) make or grant any undue preference or advantage to any person or

99. *Id.* at 627.

100. *Id.* at 625.

101. 15 U.S.C. § 717(b) (1976).

102. *Id.*

103. 406 U.S. at 637.

104. 406 U.S. at 639-41.

105. 332 U.S. 507 (1947), *cited in* FPC v. Louisiana Power & Light Co., 406 U.S. at 636-37 n.13.

106. 406 U.S. at 647.

107. *Id.* at 637 n.13 (quoting *Panhandle E. Pipe Line Co. v. Public Serv. Comm'n*, 332 U.S. at 516).

108. *Id.* at 636 (citing FPC v. East Ohio Gas Co., 338 U.S. 464, 468 (1950)).

109. *Id.* at 642-43.

subject any person to any undue prejudice or disadvantage, or (2) maintain any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.¹¹⁰

B. *Curtailement Standards*

After issuing its initial curtailment guidelines in 1971, the Commission approved far more detailed priority guidelines in 1973.¹¹¹ The most recent policy statement of the Commission with respect to curtailment priorities is found in Order No. 467-C,¹¹² which lists the following nine priority-of-service categories:

- (1) Residential, small commercial (less than 50 Mcf on a peak day).
- (2) Large commercial requirements (50 Mcf or more on a peak day), firm industrial requirements for plant protection, feed stock and process needs, and pipeline customer storage injection requirements.
- (3) All industrial requirements not specified in (2), (4), (5), (6), (7), (8), or (9).
- (4) Firm industrial requirements for boiler fuel use at less than 3,000 Mcf per day, but more than 1,500 per day, where alternate fuel capacities can meet such requirements.
- (5) Firm industrial requirements for large volume (3,000 Mcf or more Mcf per day) boiler fuel use where alternate fuel capacities can meet such requirements.
- (6) Interruptible requirements of more than 300 Mcf per day, but less than 1,500 Mcf per day, where alternate fuel capacities can meet such requirements.
- (7) Interruptible requirements of intermediate volumes (from 1,500 Mcf per day through 3,000 Mcf per day), where alternate fuel capacities can meet such requirements.
- (8) Interruptible requirements of more than 3,000 Mcf per day, but less than 10,000 Mcf per day, where alternate fuel capacities can meet such requirements.
- (9) Interruptible requirements of more than 10,000 Mcf per day,

110. 15 U.S.C. § 717c (b) (1976).

111. Order No. 467 was issued in 1973, 49 F.P.C. 85 (1973). It was followed by Order No. 467-A, 49 F.P.C. 217 (1973), and Order No. 467-B, 49 F.P.C. 583 (1973). Pipeline companies are required to file their curtailment plans with the FERC. While the plan is being reviewed, the company and their customers normally negotiate an interim plan designed, as one author has described it, "to spread the misery as equitably as possible." Muys, *Federal Power Commission Allocation of Natural Gas Shortages: Proration, Priorities and Perplexity*, 20 ROCKY MTN. MIN. L. INST. 301, 309 (1975).

112. 51 F.P.C. 1199 (1974). Order No. 467-C includes the same priorities as Order No. 467-B, 49 F.P.C. 583 (1973). It also includes a policy statement concerning relief from curtailment.

where alternate fuel capacities can meet such requirements.¹¹³

The FPC regulations group direct and indirect customers¹¹⁴ together and require full curtailment at each level before beginning curtailment at the next higher level.¹¹⁵ The Commission permits petitions for relief, however, under section 1.7(b) of its Rules of Practice and Procedure, and under extraordinary circumstances these priorities may be altered.¹¹⁶ The Commission has expressly rejected pro rata curtailments¹¹⁷ and curtailments based on preshortage contractual obligations.¹¹⁸ With respect to the latter the Commission has observed:

We are impelled to direct curtailment on the basis of end use rather than on the basis of contract supply simply because contracts do not necessarily serve the public interest requirement of efficient allocation of this wasting resource. . . . [P]erformance of a firm contract to deliver gas for an inferior use, at the expense of reduced deliveries for priority uses, is not compatible with consumer protection.¹¹⁹

Initially the list seems to encompass two themes. First, there is a strong end-use emphasis with the Commission regarding gas for human use and for small commercial consumers as highest priority.¹²⁰ The second theme appears to emphasize the distinction between "firm" service customers,¹²¹ those contracting for an uninterrupted supply of

113. 51 F.P.C. at 1200. Process uses are those in which the use of other fuels is not technically feasible. These uses require the precise temperature control and flame characteristics of gas. Gas is employed as a raw material in feedstock uses. Plant protection uses are those in which gas is necessary to prevent harm to personnel or facilities.

114. This has also led to jurisdictional questions. The Supreme Court decision in *Louisiana Power & Light* appears to go no further than to affirm the authority of the FPC to treat direct customers and those purchasing for resale similarly vis-a-vis curtailments. Order No. 467, 49 F.P.C. 85 (1973), goes further than this and extends curtailment regulations to indirect customers (i.e., those purchasing from resale customers). The power of the Commission to group direct and indirect customers together has been challenged and was upheld in *Consolidated Edison Co. v. FPC*, 512 F.2d 1332 (D.C. Cir. 1975). See generally Tiano, *The Limits of Federal Regulation of Natural Gas Curtailments*, 64 GEO. L.J. 27 (1975).

115. 51 F.P.C. at 1200-01.

116. *Id.* at 1200.

117. See, e.g., *Transcontinental Pipeline Corp.*, 10 FED. POWER SERV. (Matthew-Bender) 5-1045, 5-1089 (1976). Under a pro rata curtailment plan, if a pipeline suffers a 10% shortfall, each customer would receive 10% less than the contractual entitlement. Muys, *supra* note 111, at 305.

118. See, e.g., *Arkansas La. Gas Co.*, 49 F.P.C. 53 (1973), *remanded for further consideration sub nom. Arkansas Power & Light Co. v. FPC*, 517 F.2d 1223 (D.C. Cir. 1975), *cert. denied*, 424 U.S. 933 (1976).

119. *Id.* at 66.

120. End-use has been approved as a proper differentiating factor. See *American Smelting & Ref. Co. v. FPC*, 494 F.2d 925, 935-36, *cert. denied*, 419 U.S. 882 (1974).

121. "Firm" service is defined by the FPC as "service from schedules or contracts under which a seller is expressly obligated to deliver specific volumes within a given time period and which anticipates no interruption, but may permit unexpected interruption in case the supply to higher priority customers is threatened." *Arkansas La. Gas Co.*, 49 F.P.C. 907, 911-12, *remanded*

gas, and "interruptible" service customers,¹²² those enjoying a lower rate at the risk of service interruptions. In fact, this emphasis on the firm-interruptible distinction has curtailment on the basis of end-use as its goal. In using this distinction to determine priorities, the Commission was clearly under the impression that customers contracting on an interruptible basis were more likely to have alternate sources of fuel and less likely to use fuel for human needs or nonsubstitutable industrial service than consumers contracting for an uninterruptible supply.¹²³ The Commission has noted that "[t]he value of the 'firm-interruptible' contract distinction as a curtailment standard is . . . largely dependent upon the accuracy with which it reflects the intensity of a purchaser's need for gas."¹²⁴

In practice the firm-interruptible distinction has been a rather poor indicator of the intensity of need. This was particularly clear soon after issuance of Order No. 467 in proceedings involving the filing of a permanent curtailment plan by the El Paso Natural Gas Company.¹²⁵ The efficacy of the firm-interruptible distinction as an end-use indicator was seriously hampered because many of the industrial customers of the pipeline were located in California and the California Public Utilities Commission required all industrial contracts in excess of 200 Mcf per day to be interruptible. Customers outside of California were not subject to the same requirement.¹²⁶ Thus, under the nine category plan, consumers with identical uses would be assigned to different priority levels. In order to avoid this effect the Commission approved a five stage plan that eliminated the firm-interruptible distinction.¹²⁷ According to the Commission: "factual conditions . . . persuade us that the Commission's overriding policy of curtailment based on end-use would be contravened should the priority formula of Order No. 467-B, and the 'firm-interruptible' contract distinction embodied therein, be imposed on the El Paso system."¹²⁸ It is noteworthy, however, that the

for further consideration sub nom. Arkansas Power & Light Co. v. FPC, 517 F.2d 1223 (D.C. Cir. 1975), *cert. denied*, 424 U.S. 933 (1976).

122. "Interruptible" service is defined by the FPC as "[s]ervice from schedules or contracts under which seller is not expressly obligated to deliver specific volumes within a given time period, and which anticipates and permits interruption on short notice." *Id.* at 912.

123. Order No. 467, 49 F.P.C. 85, 86 (1973).

124. El Paso Natural Gas Co., 51 F.P.C. 2053, 2059 (1974).

125. *Id.*

126. *Id.* at 2058.

127. *Id.* at 2060-61.

128. *Id.* at 2058. In his dissenting opinion, Commissioner Moody notes that interruptible customers had consistently paid lower prices for gas than customers on firm contracts and concludes:

Commission still entertained high hopes for the firm-interruptible distinction. In its decision it cautioned that its actions "should not permit the inference that [it] is abandoning [the] position that interruptible uses should be subject to curtailment ahead of all other uses."¹²⁹

The inconsistency of priorities based on the firm-interruptible distinction with those based on end-use was even more evident in proceedings involving an interim curtailment plan submitted by Transcontinental Gas Pipe Line Corporation (Transco).¹³⁰ The suit, at the appellate level, involved a dispute between the FPC and groups of natural gas consumers over what type of interim plan would remain in effect prior to approval of a permanent plan. The plan submitted by Transco and favored by the Commission was modeled after Order No. 467 and included the firm-interruptible distinction.¹³¹ In rejecting the 467 plan the Court of Appeals for the District of Columbia Circuit cited the severity of its impact on those consuming for human purposes.¹³² A summary of this impact was presented by Piedmont Natural Gas Corporation, an intervenor in the suit:

"During the 1974-75 winter, Piedmont will lose 37.81% of gas currently being sold to customers in Order No. 467-B's category 2. As a result, Piedmont will be forced to completely curtail services to 31 hospitals, three water pumping plants serving the entire city of Greensboro, North Carolina, a city with a population of approximately 180,000, four sewage treatment facilities, three nursing homes, two state boarding schools for the physically handicapped, and one state prison. Although these customers have historically purchased gas under 'interruptible' rate schedules, the majority of these customers have historically been curtailed only a few days each year. As a result, most of these essential public service institutions do not have, nor can they readily obtain, sufficient alternate fuel capacities to permit them to offer uninterrupted service if they are completely curtailed by Piedmont."¹³³

The problems inherent in the firm-interruptible distinction were also brought out in the 1976 opinion of the Commission establishing a

[I]f one class of customers has historically paid a higher price in return for the apparent guarantee of preference in gas service, while other customers have paid a lower price in recognition of the pipeline's acknowledged right to interrupt that service, the *quid* has been paid and it is time for us to put the *pro quo* into the transaction.

Id. at 2080 (dissenting opinion).

129. *Id.* at 2060.

130. Consolidated Edison Co. v. FPC, 511 F.2d 372 (D.C. Cir. 1974).

131. *Id.* at 377.

132. *Id.* at 379-80.

133. *Id.* (quoting Affidavit of Earl C. Chambers, Senior Vice President of Piedmont Natural Gas Corporation at 13-14).

permanent curtailment plan for the Panhandle Eastern Pipeline Co.¹³⁴ In its opinion the Commission accepted the conclusion of Administrative Law Judge Zimmet that the firm-interruptible distinction should be eliminated.¹³⁵ According to Judge Zimmet the dichotomy was based on the assumptions that (1) interruptible service connotes inferior end-uses, (2) interruptible customers have alternate fuel sources, and (3) interruptible customers pay less than firm customers.¹³⁶ In fact, none of the assumptions was valid. First, many of the industrial customers using gas for feedstock, process and plant protection purposes were on interruptible contracts. Second, the types of interruptions anticipated were to be of short duration during periods of extremely cold weather. Thus, any alternate fuel supplies that had been developed were not adequate to compensate for expected long-term curtailments. Finally, the rates paid by direct interruptible customers were equal to or in excess of those paid by firm customers buying for resale.¹³⁷

While the Commission has not formally abandoned the firm-interruptible distinction, its unreliability as an indicator of end-use,¹³⁸ and the requirement that the validity of the dichotomy as a means of determining end-use be supported by substantial evidence,¹³⁹ have caused this element of FPC curtailment policy to be deemphasized. As a result of this deemphasis, the lower four priority-of-service categories of Order No. 467-C have, in effect, been eliminated and the remaining five end-use categories determine the order of curtailment.¹⁴⁰

C. *Emergency Gas*

The growing shortages of natural gas in the 1970's led gas pipelines, local distribution utilities and some industrial users to seek unregulated gas to replace the regulated interstate gas that was no longer available in adequate quantities. Replacement gas is available from a number of sources and at various prices. The replacement gases are of

134. Panhandle E. Pipeline Co., 9 FED. POWER SERV. (Matthew-Bender) 5-652 (1976).

135. *Id.* at 5-668.

136. *Id.* at 5-667. The rationale for favoring firm customers because of the higher rates they have paid is that they have, in effect, paid the higher costs of the capacity necessary to serve them during periods of peak demand. Interruptible customers have, on the other hand, opted to avoid the costs of peak demand capacity.

137. *Id.*

138. *See* Transcontinental Pipeline Corp., 10 FED. POWER SERV. (Matthew-Bender) 5-1045, 5-1089-90 (1976).

139. *See, e.g.,* Arkansas Power & Light Co. v. FPC, 517 F.2d 1223, 1233-34 (D.C. Cir. 1975), *cert. denied*, 424 U.S. 933 (1976).

140. *See, e.g.,* Panhandle E. Pipeline Co., 9 FED. POWER SERV. (Matthew-Bender) 5-652 (1976); El Paso Natural Gas Co., 51 F.P.C. 2053 (1974).

two basic types—supplemental gas and emergency gas. The primary supplemental gases include liquified natural gas, synthetic natural gas and liquid propane gas.¹⁴¹ Emergency gas is gas purchased in the unregulated intrastate market and shipped interstate for distribution in areas suffering from severe shortages. The demand for supplemental and emergency gas is sensitive to adverse weather conditions, especially to cold temperatures.¹⁴² Emergency and supplemental gases are available only at prices considerably in excess of regulated interstate prices.¹⁴³

There are basically two types of emergency gas—that purchased at the initiative of curtailed industrial users and that purchased at the initiative of a pipeline company or local distributor for resale. The former type was sanctioned in 1975 by Order No. 533.¹⁴⁴ Prior to 1973 any final user could purchase gas in the unregulated intrastate market. Order No. 533 permits interstate shipment of such gas as long as the purchasers, whether firm or interruptible, are using the gas for priority 2 purposes.¹⁴⁵ The second type of emergency gas is authorized under section 2.68 of the Commission's General Policy and Interpretations.¹⁴⁶ This type of emergency gas can be purchased for resale but is only available for a period not in excess of sixty days.¹⁴⁷

The need for emergency and supplemental gas is a direct consequence of the natural gas shortage. Since the shortages have had differential impacts among the states,¹⁴⁸ there have been widely varying

141. Another source of supplemental gas under active consideration is gasified coal. See Cicchetti & Weiner, *The End-User Pricing of Natural Gas*, 101 PUB. UTIL. FORT., March 16, 1978, at 11, 11-12.

142. The reason for this is that the demand for natural gas peaks during periods of extremely cold weather. This increases the shortage of natural gas and results in an increase in the demand for substitutes.

143. Supplemental gases are available for prices ranging from \$3.50 to \$5.00 per Mcf. Cicchetti & Weiner, *supra* note 141, at 12. Emergency gas is priced at the most attractive price at which it can be obtained by purchasers in intrastate markets. In August 1976 the intrastate price in Texas, the largest producing state, was \$1.78 per Mcf. *Federal Power Commission Biennial Rate Decision, Opinion No. 770: Hearings Before the Subcomm. on Oversight and Investigations of the House Comm. on Interstate and Foreign Commerce, supra* note 85, at 29 (statement of R. Dunham). The intrastate price indicates the approximate price at which emergency gas could be obtained. The intrastate price in August 1976 of \$1.78 per Mcf was about 25% higher than the \$1.42 ceiling price on new gas. The rolled-in average price of old and new gas was about 39 cents. Thus, emergency gas was actually about four times as costly as the rolled-in average cost. *Id.* at 18 (statement of Rep. R. Krueger).

144. 18 C.F.R. § 2.79 (1977).

145. *Id.* See generally Comment, *F.P.C. Order 533 and the Natural Gas Shortage—Too Little, Too Late*, 7 U. TOL. L. REV. 653 (1976).

146. 18 C.F.R. § 2.68 (1977). See also *id.* §§ 157.22, .29.

147. *Id.* § 2.68.

148. See text accompanying notes 162-75 *infra*.

needs for emergency gas. State policies with respect to the pricing and allocation of emergency gas are generally set by utility commissions and are subject to rapid modification as circumstances change.

In June 1977 a survey of supplemental and emergency gas pricing policies by the National Association of Railway and Utility Commissions (NARUC) revealed that twenty-one states had adopted formal pricing policies with respect to emergency gas purchased for resale.¹⁴⁹ Eleven states had policies with respect to synthetic natural gas, seventeen states with respect to liquid natural gas and nineteen states with respect to liquid propane gas.¹⁵⁰ The predominant form of policy was one of rolling-in the higher priced unregulated gases with the regulated gas; this was especially true for supplemental gas.¹⁵¹ Eight states priced some emergency gas on an incremental basis, charging the specific end user of the gas full cost of the emergency gas. Indiana priced emergency gas incrementally to industrial users and Wisconsin reported in the NARUC survey that it only priced incrementally.¹⁵² North Carolina reported a hybrid policy. In the winter of 1976-1977 the majority of the excess cost of emergency gas was rolled-in to non-residential customers, with residential customers sharing the excess cost only for the amount of emergency gas required to serve residential customers.¹⁵³ North Carolina, however, began fully rolling-in emergency gas in the summer of 1977.¹⁵⁴ Of course, gas purchased directly by final users as authorized by Order No. 533 is only available at the full incremental price of intrastate gas.

Evidence now accumulating suggests that there has been an abuse of emergency gas purchases.¹⁵⁵ Some pipelines are using emergency gas on an essentially continuing basis to supply low priority users;¹⁵⁶ some unregulated intrastate suppliers have become virtual quasi-permanent sellers of emergency gas in the interstate market.¹⁵⁷ Since the price of this gas is generally rolled-in, in terms of 467-C priorities, the

149. Report to Gas Subcommittee of the National Association of Railway and Utility Commissions (Sept. 9, 1977) (unpublished survey results submitted by Harold E. Shutt).

150. *Id.*

151. *Id.*

152. *Id.*

153. *Id.*

154. *Id.*

155. COMPTROLLER GENERAL OF THE UNITED STATES, REPORT TO THE CONGRESS: EMERGENCY GAS PURCHASES: ACTIONS NEEDED TO CORRECT PROGRAM ABUSES AND CONSUMER INEQUITIES, 95th Cong., 2d Sess. i-vi (1978).

156. *Id.* at 11, 15-19.

157. *Id.* at 9-10.

high priority users can be regarded as subsidizing the low priority users.¹⁵⁸ With these abuses in mind, the Federal Energy Regulatory Commission recently issued a notice that it will review emergency gas policies and will adopt a formal rule clarifying the policy in the fall of 1978.¹⁵⁹

Like curtailments, emergency gas is a result of the natural gas shortage. Its flow diminishes the shortage and may correct some of the distortions in regional allocations discussed below. To the extent this occurs, however, regional distortions in prices via the rolling-in of emergency gas also occur.¹⁶⁰ Although emergency gas relieves some of the pressures created by severe curtailments, the variety of uncoordinated state and local pricing and allocation schemes are equally likely to perpetuate the problems brought on by federal regulation.

IV. ECONOMIC INEFFICIENCIES OF PRESENT CURTAILMENT POLICIES

A. *Administrative Allocation and Economic Theory*

Administratively allocating a limited natural gas supply in an efficient and equitable manner is a truly Herculean task. According to economic theory an unregulated market would be both efficient and impersonal. In such a market, energy prices would adjust to those levels that would lead rational decisionmakers to choose the fuel that would be best for them given the technology of energy consumption, the risks associated with fuel availability, and the array of prices for substitute fuels. After all adjustments take place, natural gas would be allocated to those consumers and into those uses in which its value is the greatest.

In contrast to a free market for natural gas, any administrative allocation plan, including 467-C, will, according to traditional theory, be arbitrary in the sense that some uses of natural gas will be effectively

158. *Id.* at 9.

159. Policy Examination of 60-Day Emergency Natural Gas Programs: Request for Comments, Federal Energy Regulatory Comm'n No. RM78-7, at 17 (Apr. 7, 1978).

160. The prices and availabilities of gas in North Carolina and Georgia are good indicators of this differential impact. Both of these states have been affected by curtailments. North Carolina purchased massive volumes of emergency gas during the winter of 1977-1978 in order to serve priority I customers. Georgia, with a serious but less severe problem, was estimated to have a rolled-in cost of approximately \$1.40 per Mcf. States with less serious curtailments would be purchasing smaller quantities of emergency gas and, consequently, would have lower rolled-in costs. Interview with Ray Nery, Director of the Natural Gas Division of the Public Staff of the North Carolina Utilities Commission, in Raleigh, N.C., (April 24, 1978).

prohibited on a basis other than willingness and ability to pay. Administrative allocation will also be personal in that individuals rather than the market must select which willing buyers receive natural gas and which do not. Finally, an administratively determined allocation plan may be inefficient for a number of reasons. First, the initial allocation plan may fail to establish efficient priorities that direct the flow of natural gas into those uses having the highest value to society. Second, the adoption of an allocation plan creates incentives that lead decisionmakers to modify their behavior in order to move up the priority list or to avoid the allocative restrictions altogether. Third, as a dynamic economy changes the efficient utilization of natural gas must evolve with it. An administratively determined allocation scheme, whatever its initial merits, may not contain the incentives for modifying natural gas use in light of changing circumstances. In fact, by giving preferential treatment to some users, the administrative allocation plan creates vested interests that may act as an impediment to changing the policies regulating and controlling the natural gas industry. Fourth, natural gas is a fossil fuel and there is a maximum quantity available for ultimate use; consequently, the relative scarcity of natural gas is likely to increase over time.¹⁶¹ The unregulated market contains incentives encouraging innovation in socially desirable directions. The market stimulates private decisionmakers to voluntarily direct invention and innovation into the conservation of resources that are becoming increasingly scarce. An administrative allocation plan retards these market incentives and thus contributes to a waste of natural gas in the long run. Finally, even if an allocation plan itself is designed to avoid these problems, the question of how the plan fares in actual practice remains. For example, even if the existing scheme for allocating natural gas has an efficient set of priorities, the gas may not flow evenly across the country into the designated priority uses.

This latter problem of theory versus implementation is particularly significant because it does not involve the risks of the normative judgments typically involved in areas of federal regulation. One may argue endlessly about the merits of the rankings system and the

161. This does not mean that supplies of natural gas offered for sale are absolutely fixed and unresponsive to price. The percentage change in quantity supplied in response to a percentage change in price is what economists call price elasticity. The value of elasticity has important implications for natural gas policy. The exact value of this elasticity is not known. There are pessimistic and optimistic estimates. See R. MANCKE, *supra* note 30, at 110. One estimate that does not appear to be unduly optimistic or pessimistic is an elasticity of .51. This means that a 10% price increase would result in a 5.1% increase in natural gas reserves. See also Breyer & MacAvoy, *supra* note 7, at 946.

desirability of low prices in the short-run versus increased long-run supplies. Once an allocation program has been formulated, however, one purely objective consideration remains: Has the program been effectively implemented? In the case of natural gas the answer is an unequivocal "no."

B. Order No. 467-C in Practice: A Case of Regional Distortions

In practice, implementation of Order No. 467-C, as modified by subsequent Commission decisions, has led to serious and unintended regional variations in the curtailments of the interstate shipments of regulated gas. The FPC in November 1976 estimated that the curtailments for the heating season of 1976-1977 ranged from a low of zero for several states to more than sixty percent of requirements for South Carolina.¹⁶² A similar estimate for the 1977-1978 heating season revealed curtailments ranging from zero to more than sixty-six percent.¹⁶³ While the curtailments by themselves do not measure the severity of the natural gas shortage,¹⁶⁴ they are indicative of the regional disparities in the availability of regulated interstate gas. The differences in curtailments among the states cannot be explained in terms of the end-use priorities established by 467-C type curtailment plans.¹⁶⁵ Some states are curtailing high priority users and other states are continuing to serve low priority users.¹⁶⁶ In January 1977 priority 1 users (residential and small commercial) were being curtailed in those sections of the country most affected by the shortage,¹⁶⁷ while at the same time in the West and upper Midwest, practically all users were being served.¹⁶⁸

162. U.S. DEP'T OF ENERGY, PROJECTED NATURAL GAS CURTAILMENTS AND POTENTIAL NEEDS FOR ADDITIONAL ALTERNATE FUELS: 1977-1978 HEATING SEASON 15 table 2 (1977).

163. *Id.* at 31-41.

164. The basic curtailment statistic is curtailed gas as a percentage of requirements. The curtailment statistic does not show what priority is being curtailed nor does it make any reference to the availability of alternate fuels.

165. There are variations in end-uses among the states. Those with severe curtailments may be curtailing high priority users while those experiencing little or no curtailment are servicing all users. *Emergency Natural Gas Act of 1977: Hearings on H.R. 2500 Before the Subcomm. on Energy and Power of the House Comm. on Interstate and Foreign Commerce, 95th Cong., 1st Sess. 10 (1977)* (statement of James R. Schlesinger) [hereinafter cited as *Emergency Natural Gas Act: Hearings*].

166. As early as 1975 North Carolina was curtailing practically all industrial use of gas. See *Natural Gas Shortage: Hearings on H.R. 2418 Before the Subcomm. on Energy and Power of the House Comm. on Interstate and Foreign Commerce, 94th Cong., 1st Sess. 68 (1975)* (statement of Frank Zarb).

167. *Emergency Natural Gas Act: Hearings, supra* note 165, at 10.

168. *Id.*

The allocation scheme has failed when residential and small commercial users in one section of the country cannot get all the gas they need while large industrial users with alternate fuel capability are burning natural gas as a boiler fuel in other parts of the country.

How can regional disparities and distortions occur when the FPC has set up an elaborate curtailment system that favors high priority users? The reason is relatively simple. Even though the Commission regulates prices of interstate gas with a uniform national wellhead price and has an elaborate set of curtailments applicable presumably on a nationwide basis, it does not attempt to ration the nation's supply of natural gas in the interstate market. The 467-C plan is on a pipeline-by-pipeline basis. The gas of each pipeline is allocated in accordance with approved curtailment plans, but the pipelines vary widely in terms of the gas they have available to meet customer demand. By no means are all interstate pipelines able to meet the same percentage of contract demand. In the heating season of 1975-1976 (November 1 through March 1), the projected weighted average national curtailment of all interstate pipelines was just under nineteen percent.¹⁶⁹ Two large pipelines, Texas Eastern and Transcontinental (serving the east coast and terminating in New York), had projected curtailments of twenty-three and thirty-six percent, respectively,¹⁷⁰ while two other pipelines, Southern Natural Gas and Pacific Gas Transmission, had none.¹⁷¹ In the winter of 1976-1977 five of the thirty largest pipelines accounted for fifty-seven percent of all the nation's projected curtailments.¹⁷²

There are a number of reasons for the wide disparity in curtailments between pipelines. The primary source of supply of interstate gas is the long-term contracts between pipeline companies and natural gas producers for gas in a particular field.¹⁷³ Optimistic and farsighted pipeline companies bought extra reserves when they were available in the 1960's. The truly incisive ones vertically integrated into offshore natural gas production at an early date. The pipeline companies with serious curtailments today did not sign contracts for extra reserves in the 1960's, did not vertically integrate into offshore production, and

169. OFFICE OF TECHNOLOGY ASSESSMENT: UNITED STATES CONGRESS, AN ANALYSIS OF THE IMPACTS OF THE PROJECTED NATURAL GAS CURTAILMENTS FOR THE WINTER 1975-1976, at 6 (1975).

170. *Id.*

171. *Id.*

172. *Emergency Natural Gas Act: Hearings, supra* note 165, at 10.

173. The contracts usually run for 15 to 20 years. *See generally* P. MACAVOY, PRICE FORMATION IN NATURAL GAS FIELDS 29-30 (1962).

were unlucky enough to have substantial contracts with producers in fields that were exhausted at an unexpectedly early date. The effects of antipollution laws and OPEC certainly could not be anticipated, and a strong random element undoubtedly explains much of the disparity in pipeline curtailments. Regardless of the exact cause of the disparity, the failure of the FPC to allocate wellhead supplies among pipelines has significant differential impacts on regional economies.

Although the marked differences in the importance of natural gas to individual state economies lend an element of arbitrariness to any system of categorization by states, the magnitude of regional distortion caused by natural gas regulation is revealed most clearly by analyzing the impact of the enormous variations in curtailment among the states. The table below groups states into four categories ranging from those with extremely severe curtailments to those with slight or no curtailments.¹⁷⁴ The percent of total natural gas curtailed and the percent of industrial natural gas curtailed are both very important indicators of the severity of the impact of regulation-induced distortions. Both were used in classifying states into four categories. In terms of both criteria, states were ranked from highest curtailments to lowest.

The four categories may be characterized as follows:

Extremely Severe Curtailments:

Included in this category are nine states that ranked in both the top one-third of states with respect to the percent of total natural gas curtailed *and* the top one-third of states with respect to the percent of industrial natural gas curtailed. Seven of the nine states meeting these two criteria are in the Southeastern region. The most severely affected are clearly North and South Carolina. Natural gas is an important fuel in the economies of all of these states.

Severe Curtailments:

Included in this category are all states that were either in the top third with respect to total natural gas curtailments *or* in the top third with respect to industrial natural gas curtailments. Thirteen

174. The percentage of total natural gas curtailed, indicated in column 1 of the table, is that percentage of the total quantity that would have been consumed in the absence of a shortage. The percentage of industrial natural gas curtailed, column 2 of the table, is that percentage of the industrial consumption that would have occurred in the absence of a shortage. Column 3 of the table contains a similar measure for commercial curtailments, and columns 4 and 5 contain two measures of the importance of natural gas to a state's economy and are suggestive of the impact of a percentage curtailment on a state.

NATURAL GAS UTILIZATION AND THE SEVERITY OF
CURTAILMENTS BY STATES¹⁷⁵

	(1) (Heating Season 1976-77)	(2)	(3)	(4)	(1974)
	% Total NG Curtailed	% Industrial NG Curtailed	% Commercial NG Curtailments	NG as a % of Primary Fuel	NG as a % of Primary Industrial Fuel
United States	18.7	28.4	6.3	32.0	59.9
<i>Extremely Severe Curtailments</i>					
South Carolina	66.9	78.6	12.0	16.9	54.9
North Carolina	52.9	86.2	44.8	10.6	47.2
Florida	51.6	58.7	3.1	16.3	56.9
Mississippi	50.0	50.8	1.7	43.3	83.3
Georgia	38.9	68.6	12.4	26.8	71.6
Alabama	38.8	59.5	16.8	19.4	39.3
Minnesota	37.4	55.7	25.0	31.7	58.9
Arizona	33.3	50.0	0.0	30.5	77.4
Tennessee	30.4	65.6	12.9	21.8	65.6
<i>Severe Curtailments</i>					
Arkansas	45.9	43.2	0.4	43.7	84.7
California	35.6	8.6	2.3	38.1	77.4
Nevada	31.9	37.2	0.0	24.0	61.6
Nebraska	30.2	27.0	9.6	42.7	79.1
Kansas	29.3	30.0	3.0	63.9	87.7
Louisiana	27.9	27.1	0.1	77.2	94.5
Iowa	24.4	31.7	8.1	42.0	75.4
Missouri	21.3	43.3	5.8	30.1	65.5
Virginia	20.7	56.9	21.2	30.2	12.5
Kentucky	17.4	56.8	7.3	20.4	41.8
Delaware	16.5	53.7	0.0	11.1	33.5
Ohio	16.3	47.1	9.1	29.9	40.0
North Dakota	9.6				
<i>Moderate Curtailments</i>					
South Dakota	20.9	36.2	22.6	14.7	67.0
Maryland	17.7	42.8	10.3	16.8	26.7
West Virginia	16.2	41.9	0.7	25.6	16.8
Oregon	14.6	23.3	12.9	16.4	62.9
Wisconsin	13.5	24.3	5.3	30.8	69.1
New Mexico	13.4	13.1	0.1	46.6	87.5
Indiana	13.3	32.6	7.4	23.8	35.2
Utah	12.6	38.5	0.9	29.8	39.1
Pennsylvania	11.9	34.7	4.0	18.4	25.5
Washington	9.8	19.9	0.7	11.7	65.6
New York	9.5	28.2	12.8	16.0	28.6
Connecticut	5.0	22.2	4.3	9.4	23.8
<i>Slight to No Curtailments</i>					
Illinois	7.5	19.0	3.0	32.2	54.5
Wyoming	7.3	12.4	0.1	32.6	74.4
Idaho	6.5	11.6	0.8	18.8	65.0
New Hampshire	5.8	25.5	0.1	7.7	58.3
Vermont	5.3	13.5	0.0	NA	NA
Colorado	4.8	9.6	0.3	40.5	62.1
Michigan	2.5	8.8	0.6	35.5	58.1
Texas	2.4	2.7	0.0	62.2	73.0
Oklahoma	2.3	5.8	0.5	63.9	89.3
Montana	1.5	3.5	0.0	27.6	69.7
Massachusetts	1.3	5.4	0.2	11.9	32.1
Rhode Island	0.3	6.4	0.0	14.3	30.9
Maine	0.0	0.0	0.0	NA	NA

175. Table compiled by authors from data in A. BASS, PROJECTED NATURAL GAS CURTAILMENTS AND POTENTIAL NEEDS FOR ADDITIONAL ALTERNATE FUELS: 1977-1978 HEATING SEASON (U.S. Dep't of Energy, Energy Information Center, 1977), and L. CRUMP, FUELS AND ENERGY DATA: UNITED STATES BY STATES AND CENSUS DIVISIONS, 1974 (U.S. Bureau of the Mines, 1977).

states are included and they are spread widely across the country. They tend, however, to be most heavily concentrated in the mid-section of the country. Natural gas is an important fuel in all of these states also.

Slight To No Curtailments:

Included in this category are thirteen states that fall into the lower third of states with respect to *both* total natural gas curtailments and industrial natural gas curtailments. Natural gas is an important fuel in all of these states except the upper New England states, where, historically, sparse populations and great distances from the producing fields made transport costs high. Now that natural gas is a bargain relative to other fuels, the lack of pipeline capacity effectively prohibits these states from demanding additional quantities.

Moderate Curtailments:

Included in this category are twelve states that do not fit into the other three categories. All of these states fall into the middle third with respect to total natural gas curtailments *or* industrial natural gas curtailments. Eight of the states are in the middle third with respect to *both* types of curtailments. Two states, New York and Connecticut, are in the middle third with respect to industrial natural gas curtailment but are in the lower third with respect to total natural gas curtailments. Two other states, New Mexico and Washington, are in the middle third with respect to total curtailments, but are in the lower third in terms of industrial curtailments. Natural gas is an important fuel in each of these states with the exception of Connecticut, which shares many characteristics with its northern New England neighbors.

When price controls were extended to the wellhead and later when the 467-C end-use plan was adopted there was no intent to single out one or two states or a region and apply more severe curtailments to them than to the rest of the nation. But this is exactly what has happened. The Southeastern region has been the most seriously affected and North and South Carolina have suffered the most severe curtailments. The special situation of these two states deserves attention. The table shows that North Carolina had 53% of its total natural gas requirements, 86% of industrial natural gas requirements, and 45% of commercial natural gas requirements curtailed. South Carolina had corresponding curtailments of 67%, 59% and 12%. The industrial and

commercial curtailments in North Carolina are the highest in the nation by a wide margin. Moreover, for ten months in 1977 North Carolina was the only state having a policy prohibiting *all* new natural gas hook-ups.¹⁷⁶ South Carolina ranks first among all states in terms of percentage of total natural gas curtailed, although its situation with respect to industrial and commercial curtailments is not as severe as in North Carolina.

Why have the Carolinas been so severely affected? The primary reason is that each state receives major supplies of natural gas from pipelines with very poor reserve positions.¹⁷⁷ In fact, North Carolina is supplied by only one pipeline, Transcontinental, which has one of the worst delivery capabilities of any interstate pipeline.¹⁷⁸ The problems inherent in the pipeline-by-pipeline curtailment policy and the hardships suffered by the states dependent upon pipelines with severely restricted delivery capabilities have been brought to the attention of the FPC, the FERC, and the courts, with limited success.¹⁷⁹

C. Economic Impact

The extremely severe curtailments have important long-run implications for the Carolinas. Both states are relatively poor and have active industrial development programs designed to attract diversified high wage industry. The severe natural gas curtailments adversely affect regional industrial location decisions. North Carolina was one of

176. Rulemaking Proceedings Concerning Load Growth Policies of North Carolina Gas Distribution Utility Companies, North Carolina Utilities Commission No. G-100, Sub 21, at 4 (Aug. 1977).

177. A pipeline's reserves are determined by the long-term contracts that they have signed with producers of gas. P. MACAVOY, *supra* note 173, at 29.

178. In the winter of 1975-1976 Transco had curtailments of over 35%. Only three other pipelines had higher curtailments. OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, *supra* note 169, at 6.

179. See, e.g., *State ex rel. Utilities Comm'n v. Farmers Chem. Ass'n*, 33 N.C. App. 433, 235 S.E.2d 398, *cert. denied*, 293 N.C. 258, 237 S.E.2d 539 (1977); *Transcontinental Gas Pipe Line Corp.*, 10 FED. POWER SERV. (Matthew-Bender) 5-1045 (1976). *But see Consolidated Edison Co. v. FPC*, 511 F.2d 372, 380-81 (D.C. Cir. 1974).

North Carolina v. FERC, No. 76-2102 (D.C. Cir. July 13, 1978) represents the most recent and successful attempt to relieve the misallocation problem. In its opinion the Court of Appeals for the District of Columbia Circuit rejects the FERC's approval of a curtailment plan submitted by Transco because the plan did not consider the impact on end-use curtailment objectives resulting from differences in the availability of alternative pipeline suppliers among the states. *Id.* slip op. at 22-26.

The long run impact of the decision is uncertain at this time. It seems likely that some of the supply distortions will be decreased. Apart from this, however, the deficiency in the current regulatory scheme remains: pipelines in poor reserve positions will still be unable to meet demand and states dependent on these pipelines will continue to suffer from more severe curtailments than their more fortunate neighbors.

the first states with serious curtailment problems, and the North Carolina Economic Development Division began to document the adverse effects of natural gas curtailments in 1973.¹⁸⁰ In the four year period from June 1, 1973, to August 1, 1977, North Carolina was dropped from consideration for new plant location by thirty-four firms because of the shortage.¹⁸¹ The firms were in high wage industries and had a potential investment value of almost \$500 million and employment potential of over 11,000. They constructed plants in states that could make natural gas commitments.¹⁸² It is highly probable that additional undocumented plant location decisions were affected during the same period and, unquestionably, similar distortions took place in other states with extremely severe curtailments.

There are other regional distortions induced by natural gas regulation. The first distortion to materialize following the emergence of serious shortages in the early 1970's was the great disparity in prices between the producing and the nonproducing states.¹⁸³ The producing states, chiefly Texas, Oklahoma and Louisiana, have historically been heavy users of natural gas because of the low transport costs. The overwhelming bulk of the gas consumed in these states is intrastate gas and not subject to FPC price controls. The effect of restrictive FPC controls and free markets in intrastate gas has been to create a significant price differential between producing and nonproducing states. The initial effect of the differential probably was to discourage new industrial locations in the producing states and encourage them in non-producing states having lower energy prices. The higher prices in the intrastate market also forced industrial users and residential consumers to shift to higher priced alternate fuels. Since serious curtailments under FPC controls have come to affect more and more nonproducing states, the industrial location disincentives have probably faded—prices are higher in the producing states, but natural gas is available and industrial users expect it to continue to be available. In the long run, the FPC controls give an edge to the producing states, because those states have relatively freer markets than do the nonproducing states.

180. Testimony of Thomas B. Broughton, Director, Energy Development Division, North Carolina Department of Commerce, North Carolina Utilities Commission No. G-100, Sub 33 (Aug. 1977).

181. *Id*

182. *Id*

183. The regional disparity in prices occurs as a direct consequence of the dual price system

V. EQUITY CONSIDERATIONS AND CONCLUSIONS

From the standpoint of economic efficiency, the administrative allocation of natural gas has been an unmitigated disaster. Allocations are arbitrary and not in accord with the established priorities, pipelines have widely varying delivery capabilities, and there are enormous differences in curtailments of natural gas among states and regions. Moreover, the controls have dynamic inefficiencies built into them that surely retard adjustment to a world in which energy is becoming increasingly scarce. Why do we continue the controls? The shortcomings of regulation are now both obvious and serious and, taking only economic efficiencies into consideration, there seems to be general agreement that the gains from complete deregulation outweigh the costs of continued regulation.¹⁸⁴ Despite this, there clearly is no general agreement that regulation should be entirely eliminated. In considering the possibility of deregulation, equity considerations intrude and questions of fairness become at least as important to policymakers as efficiency.

The major beneficiaries of wellhead regulation have been high priority users. They have received gas at prices substantially below the cost of alternate fuels and also below the long-run incremental cost of natural gas. These high priority users, many of whom are residential customers, stand to lose substantially from deregulation. Those gaining from deregulation would include the owners of natural gas wells. It is widely believed that it would be both unfair and inequitable for residential users to pay substantially higher prices while natural gas producers reap enormous windfall gains in income and wealth.¹⁸⁵ It is this concern that is the fundamental barrier to complete deregulation of natural gas and to development of an economically efficient energy policy.

What ethical principle of income and wealth distribution should guide policy with respect to natural gas? Neither economics, political science, philosophy or ethics provides a nonarbitrary and objective answer. Federal policies with respect to wellhead price controls determine the winners and losers and make the hard choices involving the equity and efficiency trade-offs. The equity and efficiency considera-

inherent in intrastate and interstate markets. *See generally* L. WEISS & A. STRICKLAND, REGULATION: A CASE APPROACH 154-55 (1976).

184. *See, e.g.*, Hall & Pindyck, *supra* note 84, at 8-10.

185. *See, e.g.*, Heller, *Oil and Gas: The Core Issues*, WALL ST. J., Nov. 15, 1977, at 22, col. 5.

tions continue to filter through Congress and the policy choice will be made in the political arena. Charles Schultze noted in his Godwin lectures at Harvard in 1976 that the American political system has developed formal and informal rules to govern political decisions that impose direct economic losses on citizens. According to Schultze, the overriding political principle is: *Do No Direct Harm*.¹⁸⁶ Losses can occur as a consequence of second- and third-order adjustments, caused by political decisions or through failure to act, but there is an overwhelming propensity to avoid political decisions that do highly visible direct harm. In the case of natural gas regulation these secondary and tertiary effects can deal a devastating blow to the economic health of the Carolinas and the entire Southeast. Although the "no harm" rule is not absolute and decisions inflicting direct losses do occur, the rule clearly continues to play a dominant role on the issue of natural gas deregulation, thereby avoiding the imposition of unpopular short-run losses on millions of residential users.

Discussions of the alleged inequities of deregulation of natural gas usually assume that a system of price ceilings and curtailments is free of inequities. Clearly, this is not the case. A residential customer in Texas pays a substantially higher price than a comparable natural gas consumer in a nonproducing state. Similarly, a neighbor who relies on natural gas will pay a fuel bill that differs widely from that of an otherwise identical neighbor who uses fuel oil. A similar inequity exists in residential electricity compared to natural gas. Deregulation will create some inequities but it will eliminate the regulation-induced inequities identified here.

In entering into the regulation of the field price of natural gas there was never an intention to create the regional distortions and inefficiencies described in this article. Traditional economic theory has maintained, however, that the long-run consequences of ceiling price regulation in an essentially competitive market will do more harm than good. The consequences flowing from the regulation and control of the natural gas industry since *Phillips Petroleum Co. v. Wisconsin* strongly support the traditional theory.

186. C. SHULTZE, THE PUBLIC USE OF PRIVATE INTEREST 23 (1977).

