

SOME CONSEQUENCES OF FEARS BY INDEPENDENT PRODUCERS OF GAS OF FEDERAL REGULATION

ROBERT E. HARDWICKE*

This article deals with some of the problems of independent producers of natural gas¹ that are created by the fear that sales of their gas to an interstate transmission line (long line) may subject them to regulation by the Federal Power Commission under the Natural Gas Act.² If this fear is not removed, the supply of natural gas available to long lines may be insufficient before many years to meet the needs of present consumers. Moreover, the prices for gas to consumers may go considerably above present levels. It follows that the ultimate consumers of natural gas, especially householders, should be keenly interested in removing the causes of those fears.

In other articles in this special issue of *Law and Contemporary Problems* will be found comprehensive discussion of the Natural Gas Act, including the jurisdictional provisions and their interpretation by the Federal Power Commission and by the courts. Therefore, this article does not purport to establish the scope or meaning of the jurisdictional provisions, especially those quoted below in footnote 2 that exempt from jurisdiction "the production or gathering of natural gas," and also exempt certain sales and transportation. Neither does this article purport to establish the activities that are or ought to be included as part of production, nor what constitutes gathering, nor where gathering ends.³

* LL.B. 1911, University of Texas. Member of the Texas bar (Chairman Mineral Section, 1950-1951); member of the Fort Worth and American (Chairman Mineral Section 1939-1940) Bar Associations. Associate and Chief Counsel, Petroleum Administration for War, 1943-1946. Special Lecturer, Graduate School of Law, Southern Methodist University, 1951. Member of Official Editorial Board, *Texas Law Review*. Author of books: *PETROLEUM AND NATURAL GAS BIBLIOGRAPHY* (1937); *ANTITRUST LAWS, ET AL. V. UNIT OPERATION OF OIL OR GAS POOLS* (1948); and chapters in several books; author of articles on oil and gas in various legal periodicals and in *Atlantic Monthly* and the *Annals of the American Society of Political and Social Science*. Partner in Hardwicke, Haddaway and Pope, Fort Worth, Texas.

¹ In connection with the Natural Gas Act and in this article, an "independent producer" is a producer of natural gas who is not otherwise a "natural gas company" as that term is defined in the Natural Gas Act, 52 STAT. 821 (1938), 15 U. S. C. §§715-717w (1952), or who is not controlled by a "natural gas company." The terms "natural gas" and "gas" are here used interchangeably.

² 52 STAT. 821 (1938), 15 U. S. C. §§717-717w (1952). The Act, in section 1(b), 15 U. S. C. 717(b), and section 2(6), 15 U. S. C. 717a (6), reads in part as follows:

"Sec. 1(b) The provisions of this chapter 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 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."

"Sec. 2(6) 'Natural-gas company' means a person engaged in the transportation of natural gas in interstate commerce, or the sale in interstate commerce of such gas for resale."

³ The mimeographed report entitled, *Practices and Problems in Producing, Gathering and Processing Natural Gas*, made in 1947 by the staff of the Federal Power Commission to the Commission, at page 84 declares that "a gathering system would usually be regarded as extending to a point beyond the gasoline extraction plant and field compressor station, prior to receipt into the transmission system"

As a predicate for stating more precisely the scope of this article, something should now be said about (a) the place where and the time when a sale or delivery of gas may be made in or near the field where produced, and (b) the various kinds of processing of gas that may take place between the wellhead and the trunk line of the interstate transporter.

The producer of gas may sell it direct to a long line, or he may sell it to a gatherer who then sells it to a long line. When gas produced from a gas well is sold, the delivery to the purchaser is sometimes made at the wellhead, or at a meter close enough to the wellhead to be considered as wellhead; sometimes the delivery is made elsewhere, either on or off the property. When gas produced from an oil well is sold, the delivery to the purchaser is usually not made at the precise wellhead, but elsewhere on the property where the wells are located. Even so, the delivery may be so close to the well that it may be called delivery at the wellhead. Sometimes the delivery is made off the property, but in the field or its vicinity. In making contracts and fixing the point of delivery, the parties consider various factors, such as how many wells are involved and their location, whether the volume of gas produced by such well is small or large, whether the pressure is high or low, whether the gas contains liquefiable hydrocarbons, whether it must be treated, and the ownership of the gathering line. Before the gas enters the trunk line of the interstate transmission company, the gas may be, and sometimes must be, subjected to one or more processes by the producer, or in part by the producer and in part by the gatherer, or even in part by the purchaser from the gatherer.

These are the things, but not necessarily in this sequence, that may be done to the gas after it leaves the well, and before it enters the trunk line of the interstate transmission company: (a) The fluid from the well is passed through a separator located near the well, in order to separate the heavier hydrocarbons (liquids or oil) from the lighter ones (gas); (b) when water vapor is present, the gas is passed through a dehydration plant to remove the vapor; (c) when deleterious substances, such as sulphur compounds and carbon dioxide, are present, the gas is passed through a treating plant to remove these substances; (d) when the gas still contains hydrocarbons that may be economically extracted in liquid form, the gas is passed through an extraction plant to remove and liquify these hydrocarbons, which may be condensate, or natural gasoline, or "liquified petroleum gas" (L. P. G. or bottled gas), leaving dry gas (mostly methane and ethane), suitable in quality for use as fuel; and (e) when the pressure of the gas to be delivered to the trunk line of the interstate transmission company is lower than the trunk-line pressure, the gas is compressed so that it will enter the trunk line. The plants, or some of them, to do the things mentioned, may be on or off the property of the producer; and the plants may be separated or be close together. When all the processing is done by one

(long line). The meaning of "production" is discussed by Berger and Krash in *The Status of Independent Producers Under the Natural Gas Act*, 30 TEX. L. REV. 29, 55 (1951), and by the Commission in the opinion filed in the *Phillips* case, note 4, *infra*.

person, the dehydration, treating, and compression plants may, for convenience, be constructed alongside the extraction plant, so that the four separate units compose one larger unit.

We are here concerned with arm's-length sales and deliveries by independent producers to long lines, such sales and deliveries being made at or before the time when, and the place where, "gathering" ends, with no transportation of gas that is not a part of production or gathering. Even so, the independent producer fears that, because of such a sale and delivery, he may be subjected to regulation under the Natural Gas Act. This article points out why the fear exists, and what are some of the serious consequences, and suggests a remedy.

The Federal Power Commission has held and declared in several proceedings before it that it does not have jurisdiction over an independent producer solely because of arm's-length sales to a company that transports the gas in interstate commerce for resale for ultimate public consumption,⁴ but the recent opinion by the United States Court of Appeals for the District of Columbia in the *Phillips* case,⁵ Judge Clark dissenting, is read by some lawyers as holding that the Natural Gas Act does give jurisdiction over such independent producers,⁶ and is read by others as not deciding the question.⁷ The Supreme Court of the United States has granted

⁴ An arm's-length sale means a bona-fide sale after negotiation, not a simulated sale or a sale to an affiliate. The holdings of the Federal Power Commission to the effect that it has no jurisdiction because of such arm's-length sales are set forth in detail in the opinions, majority and minority, dated August 16, 1951, in *In the Matter of Phillips Petroleum Company*, Docket No. G-1148, 10 F. P. C. 246 (1951).

⁵ *Wisconsin v. Federal Power Commission (Phillips Petroleum Co., et al., intervenors) and associated cases*, 205 F. 2d 706 (D. C. Cir. 1953).

⁶ Significance is given by those lawyers to the following statements by the court:

"Accordingly the Supreme Court has repeatedly upheld the Commission's authority under the Natural Gas Act to regulate the rates at which a producer and gatherer of natural gas sells it, after producing and gathering it, to pipeline companies for resale in other states." (P. 709.)

"(1) The Commission finds that the sales involved here are sales in interstate commerce of natural gas for resale. That finding is not disputed. It follows that no state can regulate these sales. It was plain long before the Natural Gas Act was passed that 'state regulatory power could not reach high-pressure trunk lines and sales for resale. This was the "gap" which Congress intended to close.'⁹ *Federal Power Commission v. East Ohio Gas Co.*, 1950, 338 U. S. 464, 472-473, 70 S. Ct. 266, 271, 94 L. Ed. 268. As we have shown, the Supreme Court has determined that Congress closed it.¹⁰ The Commission now holds in effect that Congress failed to close it." (P. 710.)

With respect to sales made at the wellhead, or during gathering or at the end of gathering, the significance given to the statement quoted appears to be offset by a footnote reading as follows (205 F. 2d 706, 710 n. 9):

"9. Since Phillips' sales are made after the gas has been gathered into trunk lines, *Cities Service Gas Co. v. Peerless Oil & Gas Co.*, 1950, 340 U. S. 179, 71 S. Ct. 215, 95 L. Ed. 190, is irrelevant. That case upholds a state's power, in aid of conservation, to fix minimum prices for natural gas sold at the wellhead for interstate movement. Such sales are obviously made during the 'production and gathering' which Congress reserved to state control, and it 'is now well settled that a state may regulate matters of local concern over which federal authority has not been exercised, even though the regulation had some impact on interstate commerce.'"

The court seems clearly to say that no jurisdiction would have existed if Phillips had sold the gas at the wellhead or during gathering, or at the end of gathering.

⁷ One issue was whether the sales by Phillips were made during or as an incident to production and gathering, making applicable the statutory exemption from jurisdiction of production and gathering. The Commission held that the exemption applied. The Court of Appeals declared that the gas gathered by Phillips was processed, by removal in plants of some of the heavier hydrocarbons, and was then moved through short lines to points where it was sold for interstate transportation and resale. These sentences were used by the court:

a writ of certiorari,⁸ but this article will probably be in print before the Court announces its decision. If the Court clearly holds that the Natural Gas Act does not give to the Federal Power Commission jurisdiction over an independent producer solely because he makes an arm's-length sale of the character under discussion, it does not follow that his fears will perforce dissipate, and that sales, heretofore deferred, will be made to interstate transmission companies. This may seem to be odd. It will be so because the producers may still fear that efforts will be made to amend the Act, and that it may be amended, to give jurisdiction over such producers by reason of such sales. What, then, are some of the serious consequences of these fears?

FINDING AND PRODUCTION OF GAS

A brief sketch of significant facts about finding and producing natural gas may be helpful to a better understanding of the problems under discussion.

Petroleum, considered in its broad sense, is a complex mixture of hydrocarbons, with other materials, such as nitrogen, oxygen, or sulphur, present in a small degree. Petroleum is found trapped in sections of porous rock, called pools or reservoirs; it is now rarely found in commercial quantities at shallow depths, but more often at depths considerably greater than 5000 feet. The hydrocarbons, depending on several factors—such as composition, pressure, and temperature—may be found in a liquid, gaseous, or solid state (oil, gas, and asphalt or bitumens), or in a combination of those states. If found wholly as gas, the reservoir or accumulation is called a gas pool or gas field, and the gas is called gas-well gas or non-associated gas.⁹ If the hydrocarbons are found to a great degree in liquid form, the reservoir or accumulation is called an oil pool or oil field. Some gas is always found in solution in the oil, just as carbon dioxide gas exists in solution in a bottle of ginger ale. Frequently, gas is found in considerable volume in contact with the oil, but not in solution, with the gas occupying the higher portions of the reservoir. This gas is called free gas or gas-cap or associated gas. Since gas is always found in solution in the oil, it is always and unavoidably produced with oil. The production may also include some gas-cap gas. The common name for the gas produced with oil is casinghead gas, because, in the early days of the industry, gas produced with the oil was taken or vented from the head or the cap that was placed on the surface end of the casing (pipe) in the well.

"Thus Phillips sells the gas after the time and beyond the place at which production and gathering are complete and after processing has intervened." (P. 708.)

"The exemption of production or gathering does not exempt sales made after production and gathering have been completed." (P. 711.)

I read the opinion as holding that Phillips was subject to the Act because it did not sell the gas at or before the time when, and the place where, gathering ended, but sold it *after* production and gathering had been completed, and processing had intervened.

⁸ Jan. 18, 1954, causes 280 and 281, 346 U. S. 934 (1954). The application for the writ was denied on Nov. 30, 1953, 346 U. S. 896 (1953) but, on motion for rehearing, was granted Jan. 18, 1954.

⁹ Some pools are called gas-condensate pools, because the hydrocarbons in the reservoir are in the gaseous phase, but some condensation takes place in the reservoir with reduction of pressure, and a considerable amount of liquids can be obtained at the surface by reduction of pressure or temperature, or both. The word "field" describes the general area under which are found one or more "pools."

The term "natural gas" or simply "gas," for the purpose of this article, includes gas-well gas, gas-cap gas, and oil-well gas or casinghead gas.

The independent producer¹⁰ is the member of the petroleum industry who finds and owns a large percentage of the gas reserves, and who will find most of the new reserves. To a large degree, he is a gambler, sometimes being spectacularly successful, but more often a heavy loser, even though financially able to take the losses and stay in business, making nothing more than a reasonable profit by averaging failures and successes. There is good authority for saying that the value of all the oil and gas produced to date is less than the money spent in searching for and producing it, and it is doubtful whether the value of the proved reserves will make up the deficit.¹¹

In spite of the almost unbelievable advance in the last 30 years in the science of finding new reserves, the records show that, on the average, only one out of nine wildcats (wells drilled in search of petroleum in areas where petroleum is not known to exist or on structures not yet producing) finds oil or gas.¹² Though the ninth well, on the average, finds oil or gas, it does not follow that the venture is successful, or that the explorer has struck it rich.

The Independent Petroleum Association of America, using the information appearing in the January 1951 *Bulletin of the American Association of Petroleum Geologists*, distributed a card on which the risk element in wildcatting or hunting for new sources of petroleum was expressed as follows:

- (a) There is one chance in 40 of finding a gas field.
- (b) There is one chance in 16 of finding a very small oil field, and often the production will not repay the investment and expenses.
- (c) There is one chance in 53 of finding a small oil field, one that would supply the United States from four hours to two days.
- (d) There is one chance in 330 of finding a medium sized oil field, one that would supply the United States from two days to one week.
- (e) There is one chance in 991 of finding a large oil field, one that would supply the United States for a week or more.
- (f) The average cost of the wells was \$90,000 per well.

The average cost of all wells drilled in the last few years is more than \$100,000 per well,¹³ with the average cost of wildcats being greater. Although technology

¹⁰ For definition, see note 1 *supra*.

¹¹ CARL COKE RISTER, *OIL! TITAN OF THE SOUTHWEST* 394 (U. OF OKLA. PRESS, 1949).

¹² In the *Bulletins of American Association of Petroleum Geologists*, Jan. 1951 and June 1953, will be found statistics with respect to exploratory drilling, and the odds that are applicable. *World Oil* for Feb. 15, 1954, contains much information as to the results from exploratory drilling. An article on the subject begins on page 89. It appears that in 1953 exploratory wells numbered 10,675, of which 9,254 were non-productive, and 1,421 were productive or found petroleum. A news dispatch says that late in February oil was discovered in Nevada, and that 75 dry holes were drilled before the discovery was made. As yet, it is not known whether the discovery may be classed as a profitable one. The Nevada record indicates clearly the hazard of wildcatting, and the disappointment that is likely to take place if a wildcatter thinks that he will find oil or gas in at least one of every nine wells drilled by him. *Time*, Mar. 1, 1954, p. 86. A picture of the well appears in *Life*, Mar. 8, 1954, p. 44.

¹³ Hardwicke, *Oil-Well Spacing Regulations and Protection of Property Rights in Texas*, 31 *TEX. L. REV.* 99, 111 (1952). The average cost for the period 1945-1949 was stated to be about \$78,000.

has greatly improved the chance of finding subsurface structures that might be traps for oil or gas, it still takes the drill to tell whether either has been trapped, and in what quantities.¹⁴

PRODUCTION NOT PUBLIC UTILITY FUNCTION

Is there any doubt that the business of finding and producing oil and gas at a profit involves risks that are formidable? The business is highly competitive and speculative; the producer does not dedicate his properties to public service; and he receives no benefits of a monopoly, as does a public utility. Stated differently, the finding and producing of oil and gas do not constitute a public utility function, and the profits to be made on the sale of gas by independent producers should not be regulated any more than the profits on coal or iron, or steel or pipe, merely because the product is purchased by a public utility or by an interstate natural-gas transmission company that is regulated under the commerce clause of the Constitution as if the company were a public utility.¹⁵

GROWTH OF MARKETING OF GAS

For many years in the southwest, a large percentage of the natural gas had little value. Indeed, in many areas for a long time it could not be given away. Many wells in gas fields were capped. Much of the casinghead gas was dissipated (flared or vented) for the lack of a market or any prospect of a market. The oil was needed, but not the unmarketable gas that was unavoidably produced with the oil. To have saved the gas produced with the oil would have required the shutting down of the oil wells, with no benefits that justified such drastic action.¹⁶ Fortunately, better conservation practices and markets for gas have brought about a material reduction in the dissipation of oil-well gas.

Members of the petroleum industry have in the past searched for oil pools, not gas pools, and, with few exceptions, that is now the situation. The finding of additional reserves of gas still remains an incident to the search for oil. It follows, of course, that, if gas has substantial value, there will be greater stimulus for exploration than if gas had little or no value.

With the construction of large, high pressure, interstate pipe lines, particularly in the 1930's and after World War II, reaching north and northeast to large

Costs and average depth have materially increased since 1949. In the Sept. 1953 issue of *World Oil*, the average cost of drilling all wells, development and wildcat, was stated as being \$105,000.

¹⁴ The geologist, the geophysicist, and other scientists, even in areas where no oil or gas has been found, are now able to "look" far beneath the surface of the earth, and usually can trace formations with extraordinary accuracy; however, a report to a prospector does not say that, if you drill, you will find oil or gas in a specified area. The report usually goes no further than to say that certain conditions or structures are indicated that might serve as a trap for oil or gas. The prospector may even be certain of the structure, and it may exist precisely as indicated by the scientist, but it takes the drilling of a well to tell whether oil or gas is present.

¹⁵ Rex Baker, in *A Free Market for Natural Gas Is Essential*, a paper before the annual meeting of the New Mexico Oil and Gas Association on Dec. 2, 1953, gives his reasons for saying that production of gas is not a public utility function, and that the regulation of field prices for gas sold by independent producers is wrong in principle.

¹⁶ Hardwicke, *Adequacy of Our Mineral Fuels*, 281 ANNALS 55, 61 (May, 1952).

centers of population, the demand for gas increased, and better prices were offered or appeared to be likely; consequently, in recent years and in many instances the finding of a gas pool instead of an oil pool has not been the disappointment that it had been.

GROWTH OF TRANSMISSION LINES AND MARKETS

In many parts of the country, but especially in the Appalachian and Mid-Continent areas, natural gas had been transported considerable distances and marketed long before 1925,¹⁷ but that year may fairly be selected as the beginning of a new era for the natural gas industry. The natural gas resources of the nation in 1925 were estimated to be 23 trillion cubic feet, and in 1930 as 46 trillion cubic feet,¹⁸ with only a small fraction of the reserves being marketed. In the petroleum industry "reserves" of oil or gas means supplies that have been proved to exist by the drilling of wells, and that can be produced and sold economically.

Gas was found in the Monroe Field in Louisiana in 1916, and in the Panhandle Field of Texas in 1918, but production from those reserves went slowly until about 1925, because the gas had little value, some being used locally as fuel, and in the manufacture of carbon black. About 1925, drilling had shown the existence of huge reserves of gas in those two fields. This proof, together with extraordinary technological improvements in high-pressure transmission of gas, were prime factors that stimulated the construction of several long and large high-pressure lines from those areas to the north and east.¹⁹ No doubt, another factor was the ease with which companies could be financed in the last half of the 1920's. By 1934, customers in 32 states were being supplied with natural gas, largely from these three areas of great reserves: Panhandle Field in Texas, Monroe Field in Louisiana, and Hugoton Field that now lies partly in three states, Kansas, Oklahoma, and Texas. Some of the interstate lines were 24 inches in diameter, and 1200 miles long.²⁰

A number of these new interstate transmission companies, instead of relying on purchases of gas from producers on long-term contracts, adopted the policy of obtaining gas rights on enormous tracts of proved or semi-proved or likely gas lands in the southwest, particularly in the Panhandle of Texas. The cost was not great. Huge areas of these lands were soon proved to be rich in gas. In many instances, it appeared that the long line could produce from its own wells considerably more gas than was needed to supply its customers. This ownership of gas by the long lines minimized the need for purchasing gas from others, though long-term contracts could have been made, and many were made, at very low prices, such as three cents or less a thousand cubic feet (M.C.F.). A large number of producers who had gas

¹⁷ JOHN STOCKTON, RICHARD C. HENSHAW, AND RICHARD W. GRAVES, *ECONOMICS OF NATURAL GAS IN TEXAS 152-154* (1952); ERICH W. ZIMMERMANN, *WORLD RESOURCES AND INDUSTRIES* 562 (Rev. ed. 1951).

¹⁸ COMMITTEES OF AMERICAN GAS ASSOCIATION, *GAS FACTS, 1952 DATA* 24 (Table 7) [hereinafter cited as *GAS FACTS, 1952 DATA*].

¹⁹ STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra*, note 17, at 154; G. A. WARNER, *TEXAS OIL AND GAS SINCE 1543* c. 7 (1939); RISTER, *op. cit. supra* note 11, at 272-283.

²⁰ STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 154.

wells and large reserves could not sell their gas to the long lines, even at very low prices. Other markets were few, and prices were low. The many extraordinary complications, dissipation of gas, and lawsuits that resulted from the situation in the Panhandle Field have been told by Maurice Cheek. An account of the situation in the Monroe Field has been written by Yandell Boatner. The events need not be sketched here.²¹ It is clear, however, that the low prices for gas under the long-term contracts that were made in the period 1925-1935, and the low prices paid by the long lines for enormous areas that were later proved to be huge reserves of gas, brought about some of the problems under discussion in this article, a basic factor being low wholesale prices by long lines to distributing companies, and prices to consumers at levels far below prices applicable to competing fuels, such as coal and oil.

The World-War-II period delayed further expansion of transmission and distribution facilities for natural gas, but unusual activity began again as soon as the war was over and materials could be had. One company, Texas Eastern Transmission Corporation, purchased from the United States two large pipelines that were built during World War II to transport oil and products to the east coast. They were known as the Big Inch (24 inches in diameter, with more than 1200 miles of main line) and the Little Inch (20 inches in diameter, with approximately 1500 miles of main line). Those lines were then adapted for the transmission of natural gas. Forty-one states, at the beginning of 1953, were being served with natural gas.²² The only section of the country not being served at that time was the Pacific northwest,²³ and the people of that section may, before very long, be burning natural gas transported from Canada or from the San Juan Basin in Colorado and New Mexico. There are now many more miles of gas pipe lines in operation in the United States than of railroads.²⁴

The natural-gas industry has matured since 1935, now being an important unit in our economy, as a few facts will show. Proved reserves of natural gas have increased from about 23 trillion cubic feet in 1925, to approximately 200 trillion cubic feet on January 1, 1953, and to about 211 trillion cubic feet on January 1, 1954.²⁵

²¹ LEGAL HISTORY OF CONSERVATION OF OIL AND GAS—A SYMPOSIUM 61 and 269 (1939); STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 213.

²² HENRY OZANNE (ED.), THE GAS RECORD I (1953); see JOHN W. FREY AND H. CHANDLER IDE (EDS.), A HISTORY OF THE PETROLEUM ADMINISTRATION FOR WAR 104 (1946), for considerable information as to the Big Inch and Little Inch lines.

²³ Earl H. Eaker, President of American Gas Association, in Press Release in the nature of a review and forecast, dated Dec. 31, 1953, and digested in Oil and Gas Journal, Jan. 4, 1954, p. 49.

²⁴ Eaker, in press release cited in note 23 *supra*, says that at the end of 1953 there was 394,000 miles of gas lines, a distance equal to 16 times around the earth. An excellent account of the growth of the natural gas industry is found in *Economics of Growth Industry*, Business Week, Sept. 26, 1953, pp. 85-108.

²⁵ GAS FACTS, 1952 DATA, *op. cit. supra* note 18, at 24, for reserves from 1925 through 1945; STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 118, for period 1937-1951; the annual report in booklet form for 1953 of the American Gas Association and the American Petroleum Institute gives the gas reserves as of Dec. 31, 1953, at about 211 trillion cubic feet. Joseph A. Kornfield, in the Oil and Gas Journal for Jan. 1, 1954, at page 193, estimates the reserves at the end of 1953 at more than 205 trillion cubic feet at 60° F. and 14.65 psia. A similar estimate appears in World Oil, Feb. 15, 1954, p. 163.

Thousands of persons and companies are now engaged in producing gas.²⁶ The marketed production has expanded from 2 trillion cubic feet in 1920, to about 3 trillion in 1940, to more than 9 trillion in 1953. It is believed that the figure will be considerably higher by the 1955-1956 heating season,²⁷ if it be assumed that enough of the reserves will be made available to the long lines. Natural gas now supplies some 25 per cent of the country's energy. The demand seems to be insatiable for the convenient, premium fuel, at least at present prices, or even at prices that are equivalent to prices for coal and heating oils. One company in Ohio had a waiting list of 70,000 householders, and Chicago, a list of 135,000, by the end of 1952.²⁸ A similar situation exists in many other areas.

According to a government publication, the number of residential customers of natural gas increased from 15,683,000 in December 1951, to 18,138,000 in June 1953.²⁹ The number has increased at least 150 per cent since 1940, with one estimate of more than 20,600,000 at the end of 1953, with the volume of sales also at a new high, and with little indication of any slackening of demand.³⁰

PRESENT RESERVES, PRICES, AND DEMANDS

This, then, is at least part of the present situation:

(1) Gas reserves are great, being approximately 211 trillion cubic feet on January 1, 1954. The trend continues upward.

(2) About 86 per cent of the nation's reserves are in the southwest, with more than 50 per cent of the total in Texas, about 16 per cent in Louisiana, 7 per cent in

²⁶ Hines Baker, *Natural Gas for the Future*, The Petroleum Engineer, Drilling and Producing Edition, Feb., 1954, pp. E-2, E-4, and The Humble Way, November-December, 1953, pp. 5, 7. Foster, in *Production and Gathering Under the Natural Gas Act*, PROCEEDINGS OF SECTION OF MINERAL LAW, AMERICAN BAR ASSOCIATION 11-12 (1951), with supporting references, says that in 1949 there were more than 30,000 producers of oil and gas, and more than 2300 independent producers and gatherers who were selling gas to interstate lines.

²⁷ U. S. DEP'T OF INTERIOR, PETROLEUM ADMINISTRATION FOR DEFENSE GAS REQUIREMENTS AND SUPPLIES OF THE GAS UTILITY TRANSMISSION AND DISTRIBUTION INDUSTRY, 1950-1955 11, 17, 28, 29, 30 (1952); BUREAU OF STATISTICS OF AMERICAN GAS ASSOCIATION, GAS REQUIREMENTS AND SUPPLIES OF THE GAS UTILITY AND PIPE LINE INDUSTRY 16, 23, 49, 53 (1953).

²⁸ *Economics of Growth Industry*, Business Week, Sept. 26, 1953, pp. 85-108. The Daily News Digest of Sept. 21, 1953, published by the Federal Power Commission, quotes a dispatch saying that the Chairman of the Public Utility Commission of Ohio estimated that nearly 125,000 home-heating applications were on file in Ohio, but natural gas to serve them was not available.

²⁹ U. S. DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS S-26 (Dec. 1952); *id.* at S-26 (Dec. 1953).

³⁰ Eaker, *supra* note 23, *passim*; in GAS FACTS, 1952 DATA will be found Table 59 on page 92 showing natural gas customers by classes of service (residential, commercial, industrial, and others) from 1932 through 1952. World Oil, Feb. 15, 1954, p. 156, gives the number of residential consumers in 1953 as 24,285,000. Many writers have sketched the extraordinary growth in the last 25 years of the natural gas industry, such as: Davis, *Natural Gas at the Beginning of 1950*, a talk before the Boston Club, Harvard Business School, Jan. 25, 1950, and *Natural Gas in an Expanding Economy*, PRODUCTION BULL. No. 238 36 (AM. PET. INST., 1952); PRESIDENT'S MATERIALS POLICY COMM'N, RESOURCES FOR FREEDOM, VOL. 3, THE OUTLOOK FOR ENERGY RESOURCES 15 (June, 1952); Baker, *supra* note 26; OZANNE, *op. cit. supra* note 22; Business Week, Sept. 26, 1953, *supra* note 24; STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17; ZIMMERMANN, *op. cit. supra*, note 17, at 35; *Boom in Natural Gas*, Life, March 10, 1952, p. 89; Francis, *Federal Regulation of Interstate Shipment and Sale of Gas*, FOURTH ANNUAL INSTITUTE ON OIL AND GAS LAW AND TAXATION 103 (SOUTHWESTERN LEGAL FOUNDATION, 1953).

Kansas, 7 per cent in New Mexico, 6 per cent in Oklahoma, and about 5 per cent in Arkansas.³¹

(3) Prices in the field to the producers for gas for all purposes, including carbon black, are still low, though they have on the average increased in the last few years, such as an increase in Texas from an average of 2.6 cents M.C.F. in 1945, to 5.4 cents M.C.F. in 1951, with 80 per cent of the Texas gas bringing producers less than 7 cents M.C.F., and 90 per cent less than 11 cents M.C.F.³² The average is now somewhat higher, yet the wholesale prices for gas at consuming city gates are about the same as in 1939, while prices generally have increased materially, with prices for coal and heating oils doubling.³³

(4) The prices paid by consumers of natural gas are bargain prices for a convenient, premium, clean fuel that is easy to control with a thermostat, such prices being far below those applicable to competitive fuels.³⁴

(5) The residential consumer demand for natural gas will probably remain unsatisfied as long as that disparity in prices exists. The convenience of gas will no doubt keep it in demand though prices be slightly higher than equivalent prices for competitive fuels.

³¹ GAS FACTS, 1952 DATA 19-20. The chart on page 19 of the book shows the southwest as having 77.4 per cent of the nation's reserves, which does not appear to be accurate if calculated from the figures given on page 20. Apparently, some of the states mentioned are included in the midwest or Rocky Mountain section, instead of the southwest. STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at chapter 5, gives the figures for December 31, 1950, with Texas having 55.2 per cent of the nation's reserves, Louisiana 15.4 per cent, Kansas 7.4 per cent, Oklahoma 6.3 per cent, New Mexico 3.8 per cent, Arkansas .5 per cent, making a total of 88.6 per cent of the nation's total. The recent estimate by Kornfield for January 1, 1954, gives total reserves as more than 205 trillion cubic feet, with 106 trillion, or about 57 per cent of the total, in Texas. Oil and Gas Journal, Jan. 25, 1954, p. 193. (Report No. 8, by the American Petroleum Institute and the American Gas Association, just published, giving reserves as of Dec. 31, 1953, shows no material changes in 1953 in the state percentages given in the text for 1952.)

³² Rather, in a paper before the Texas Independent Producers and Royalty Owners Association, 7th annual meeting on Mar. 31, 1953. Rather said that the average price paid by one long line to producers on the Texas Gulf Coast was 6.46 cents M.C.F. on January 1, 1952, and 8.54 cents M.C.F. in the same fields on February 1, 1953. STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra*, note 17 at 263. In *Tippro Topics*, published by the association mentioned, the November and December issues of 1953, and the January issue of 1954, contain a list of prices being paid by purchasers in three different fields in Texas. The range between high and low is considerable, such as 7 cents to 9-1/2 cents M.C.F. in Carthage, 1-3/4 cents to nearly 10 cents in San Salvador, and about 2-2/3 cents to 9 cents by some companies in areas of the Panhandle. See Comment, *Federal Price Control of Natural Gas Sold to Interstate Pipe Lines*, 59 YALE L. J. 1468, 1486 (1950).

³³ Baker, *supra* note 26, at E-2, and in *The Humble Way*, pp. 6-7. The chart in *Humble Way* shows the facts clearly. A similar chart appears on page 257 of GAS FACTS, 1952 DATA, and in *Business Week*, Sept. 26, 1953, p. 96, note 24 *supra*.

³⁴ See note 33 *supra*; PRESIDENT'S MATERIALS POLICY COMMISSION, RESOURCES FOR FREEDOM, *op. cit. supra*, note 30, at 18; in *Business Week*, note 28 *supra*; STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 256; Falck, *Impact of F.P.C. Rate Regulation on Natural Gas Production*, 51 PUBLIC UTILITY FORTNIGHTLY 420 (Mar. 26, 1953). Davis, in *Natural Gas in an Expanding Economy*, PRODUCTION BULL. No. 238, *supra* note 30, at 36, says that in many areas the annual cost of heating an average home was \$200 for oil, \$145 for bituminous coal, and \$90 for gas. There is no need to give citations to statements by many other writers who have declared that prices of natural gas to consumers, on the whole, are at bargain levels, and that generally the prices paid to producers by long lines are on the low side. A good review of field prices (prices to producers) is given in Comment, *Federal Price Control of Natural Gas Sold to Interstate Pipelines*, 59 YALE L. J. 1484 (1950), and Holloway, *State Regulation of Minimum Field Gas Prices*, 4 OKLA. L. REV. 69 (1951).

(6) There is no certainty, however, that a sufficient supply will be available to meet the demands of present consumers, much less the demands of additional ones, unless the producers get higher prices, and it is made certain that the Federal Power Commission has no jurisdiction to fix the prices paid to independent producers, or to regulate their operations, merely because of arm's-length sales to long lines.

It will be remembered that, prior to the building of the earlier interstate transmission lines, the market for gas in the southwest was limited, and in some areas was nonexistent. The construction of the long lines between 1925 and 1940 improved the situation, but many of them had their own reserves, and could supply a large part or all of their needs from their own wells. Moreover, the competition among the long lines for contracts with producers was not strenuous. There was no need for it, as the producers were anxious to sell. A buyers' market existed. Obviously, this placed the companies in a fine bargaining position when they chose to negotiate contracts. Most of the long lines that were built before 1940 were able to make contracts with producers, usually for 20 years or more, at fixed prices that were quite low. Some, but not many, of the contracts contained an "escalator clause," providing for increases in prices at stated dates, but, as the starting level was low, this did not ordinarily result in an increase during the latter part of the term of those old contracts so that the prices approximated those paid under later contracts.

PROBLEMS CREATED BY THE NATURAL GAS ACT

We now come to serious additional problems for the producer of gas that were created by the passage of the Natural Gas Act in 1938,³⁵ and the method used by the Federal Power Commission, approved by the Supreme Court of the United States, to value properties of the long lines for rate-making purposes. Other articles in this special issue of *Law and Contemporary Problems* will discuss in detail the problem of rates.³⁶ In brief, instead of following the traditional methods for determining the fair value of properties and facilities used in the business, the "prudent investment" or "depreciated cost" method was adopted, and a rate of 6½ per cent was allowed on the value so determined. The depreciated cost of the properties from which the gas was produced was, of course, lumped with other assets, and the permitted rate was 6½ per cent.³⁷ To illustrate, if a long line acquired for

³⁵ 52 STAT. 821 (1938), 15 U. S. C. §§ 717-717W (1946).

³⁶ Francis, *Rate Regulation of Natural Gas Companies by the Federal Power Commission, infra*; Klein, *Accounting Aspects of Utility Rate Regulation, infra*.

³⁷ A lower rate, 5½ per cent, was allowed Northern Natural Gas Company, Docket No. G-1382, 95 P.U.R. (N.S.) 289 (1952). The switch from the "fair value" basis, established in 1898, often called the Smyth v. Ames (169 U. S. 466) formula, to "prudent investment" or "depreciated cost" basis, began with Federal Power Commission v. Natural Gas Pipe Line Co., 315 U. S. 575 (1942), and was clearly established in Federal Power Commission v. Hope Natural Gas Co., 320 U. S. 591 (1944). These articles in legal periodicals discuss the change in method and some of its consequences: Bonbright, *Contributions of the Federal Power Commission to the Establishment of the Prudent Investment Doctrine of Rate-Making*, 14 GEO. WASH. L. REV. 136 (1945); McCreery, *The Legal Consequences of the Interstate Natural Gas Company Decision and Related Cases*, 19 MISS. L. J. 153, 180 (1948); Newcomb, *Effects of Federal Regulation Under the Natural Gas Act upon the Production and Conservation of Natural Gas*, 14 GEO. L. REV. 217 (1945), and *Federal and State Regulation of Gas Utilities*, FIRST ANNUAL INSTITUTE ON OIL AND

\$100 the gas rights on a large area; if drilling proved that every acre was rich in gas; and if the proof showed that the market price for gas in the field was 10 cents M.C.F., and the property could be sold for \$10,000,000, the value of the property for rate purposes would not be \$10,000,000, but its depreciated cost which would be \$100 or less. The permitted rate would be 6½ per cent, perhaps less, on that value, no matter how much gas was produced and marketed that had a field value of 10 cents M.C.F. Under such a method, the company would virtually give away its gas if it elected to produce it and sell it in interstate commerce for resale.³⁸

GAS LAW AND TAXATION 96, 136 (SOUTHWESTERN LEGAL FOUNDATION 1949); Comment, *Federal Price Control of Natural Gas Sold to Interstate Pipe Lines*, 59 YALE L. J. 1468, 1478 (1950); Comment, *Jurisdictional Conflicts Under the Natural Gas Act*, 17 U. OF CHI. L. REV. 479 (1950); Francis, *supra* note 30, at 108. See also articles by (a) Messrs. Merrill, Kulp, and Hervey, (b) Carl I. Wheat, (c) Charles V. Shannon, (d) Richard B. McIntire, and (e) Ralph E. Davis in Quarterly Bulletin of the Interstate Oil Compact Commission (Nos. 1 & 2), June, 1945. There are other articles in the Bulletin concerning natural gas, including such subjects as reserves, conservation, carbon black, underground storage, and petrochemicals.

³⁸ See note 37 *supra*. C. H. Hinton, Vice President of Panhandle Eastern Pipe Line Company, in testimony before the Federal Power Commission on Jan. 30, 1953, said that the return allowed on some of the gas produced by his company was "less than nothing," because depreciation had wiped out cost. Another illustration will reflect the problems, and the illustration is no more fanciful than the actual situation stated by Mr. Justice Jackson in his concurring, yet dissenting opinion in *Colorado Interstate Gas Co. v. Federal Power Commission*, and companion case, 324 U. S. 581, 610-612 (1945), where he observed (p. 610) that the "cases vividly demonstrate the delirious results produced by the rate-base method" used by the Commission.

The illustration:

- (1) An oil company is organized with a capital of \$2,000,000.
- (2) It buys, for \$1 an acre, leases on nine widely separated blocks of 10,000 acres each.
- (3) A well is drilled on each at a cost of \$100,000 for each well.
- (4) Eight of the wells are non-productive, resulting in a loss of \$880,000. The ninth well finds a rich reserve of gas; that block has a market value of at least \$3,000,000; and the gas has a market value in the field of 10 cents M.C.F.
- (5) The company considers selling the gas as produced to an interstate transmission company for a 20 year period. The attorney for the producing company points out that such a sale may subject the company to jurisdiction of the Federal Power Commission, with the chance that the returns of the company will be limited to 6½ per cent on depreciated cost, equivalent to fixing the sales price for the gas sold.
- (6) The attorney also says that it is doubtful whether, if jurisdiction exists, the cost of purchasing the eight blocks and drilling the eight dry holes, a total of at least \$880,000, can be charged as expense, to be deducted from income from sale of gas produced from Block No. 9, but it appears that the Commission has heretofore taken the position that the expense of drilling any dry holes on a *producing tract* of a natural gas company is a proper allowance, as the company would then be in the gas producing business, deliberately developing its property for gas. Printed report of Commissioners Olds and Draper in NATURAL GAS INVESTIGATION (DOCKET No. G-580) at page 117, and similar reports by Commissioners Smith and Wimberly at page 196.
- (7) If the depreciated cost method should be used, the company's return would be limited to 6½ per cent or less on \$10,000, with proper deductions for expense, which might or might not include the \$880,000 applicable to the eight blocks.
- (8) The permitted return on a depreciated cost basis would be so low that the company would virtually be giving its gas away.
- (9) The permitted return on a depreciated cost basis would be insignificant when compared with the return that would obtain if based on the fair value (\$3,000,000) of the producing tract at the time the sales contract with the long line was being considered, with deductions for the expenditures in connection with leasing and drilling operations carried on to find oil and gas.
- (10) The return would also be insignificant when compared with the income to the producer, if in an open market under competitive conditions, he should sell the gas for 10 cents M.C.F. and not be subjected to regulation by the Federal Power Commission.

The reluctance of the producing company to take the risk of regulation and price fixing by selling gas

(After this article was sent to the printer, the Federal Power Commission, on April 15, 1954, in *Re Panhandle Eastern Pipe Line Company*, Docket Nos. G-1116 *et al.*, by Opinion No. 269, changed the rate-base method by adopting, briefly stated, weighted average arm's-length prices for identical gas in the field where produced. Doubtless anticipating such action, Senator Ferguson of Michigan had earlier introduced a bill, S. 3178, to require the Commission to use the depreciated-cost for rate making purposes. No one knows the outcome or what method will or must be used.)

One long line company sold some of its non-producing properties, virtually proved reserves, in order to obtain their value. The Federal Power Commission brought suit to restrain the sale, asserting that the sale would impair the ability of the company to supply its customers, and that no such sale could be made without first obtaining permission from the Commission. The Supreme Court of the United States held in favor of the company.³⁹

It remains to be seen whether other long lines will make sales of some of their properties in order to avoid the application of a method of fixing rates that in effect places a value on the gas produced that is far below the market value of gas in the field. Certain it is, as will be shown, that the long lines have materially reduced production from their reserves. Of course, in many instances a rate base that used the present value of properties or the market value in the field of gas would result in a large profit to those lines that acquired properties at bargain prices. It is also true that in some instances depreciated cost might be greater than actual value, and some producers or long lines might benefit.⁴⁰ This is not the place to deal with rate making applicable to long lines of natural gas companies, except to say that, whatever the method, it produces consequences that bear on production, reserves, and prices to ultimate consumers, and also influences the actions of independent producers and the long lines.

It appears that the long lines in 1945 controlled approximately 35 per cent of the gas reserves;⁴¹ that they could produce about 40 per cent of their needs;⁴² and that

to the interstate transmission company is understandable. Logically, the company would try to sell the gas for use in the state, or would sell the producing tract for its value (\$3,000,000). The purchaser might be willing to sell the gas to a long line, even if that gave jurisdiction to the Federal Power Commission, for the cost to him (\$3,000,000) would be used in determining permissible returns. It has been assumed that the original producing company was an independent producer, not a natural gas company, and had not dedicated the property to public service. Otherwise, the purchaser of the producing property would take the risk that the original cost might be used if his sale of gas to the long line gave jurisdiction. The risk would be based on the possibility of the application of Section 201.01-29 of the Uniform System of Accounts of the Federal Power Commission (18 CODE FED. REGS. §201.01-29 (1949)), reading as follows: "Original cost," as applied to gas plant, means the cost of such property to the person first devoting it to public service."

³⁹ Federal Power Commission v. Panhandle Eastern Pipe Line Co., 337 U. S. 498 (1949).

⁴⁰ Shannon, *supra* note 37, at 44.

⁴¹ STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 146. The printed report of Commissioners Smith and Wimberly, made in 1948 in NATURAL GAS INVESTIGATION (DOCKET G-580), and cited herein as SMITH-WIMBERLY 1948 REPORT, at 62, uses 35 per cent. Rayburn L. Foster, in *Production and Gathering Under the Natural Gas Act*, at page 8 of the report of the PROCEEDINGS OF THE SECTION OF MINERAL LAW, AMERICAN BAR ASS'N (1951), says that the independents at that time owned 87 per cent, and the long lines 13 per cent, of the proved reserves, a considerable change since 1945

they did produce 35 per cent of their requirements in 1945, but now produce only 15 per cent.⁴³ The situation may be explained in part by the rate-base method adopted by the Federal Power Commission, and in part by the fact that few of the long lines organized since 1945 own large producing areas, so that they had to get their requirements from producers under contracts that reflected the better bargaining position of the producers.

A large percentage of these more recent contracts not only provide for prices that are two or three times those paid in the 1925-1940 period, but also contain an escalator clause that provides for substantial price increases at fixed periods, and also a "favored nation" clause that obligates the purchaser, if it later buys gas at a higher price in the field or area from any other producer, to pay that price to the seller whose contract contains a favored nation clause.

Another important provision, as far as this discussion is concerned, is one found in most of the recent sales contracts that gives to the producer the right to cancel the contract, or provides for an automatic cancellation, if the Federal Power Commission has or claims to have jurisdiction over the producer. As already stated, many independent producers simply refuse to sell gas to the long lines for fear that the Federal Power Commission may have the authority to regulate such producers, fixing prices at which they sell the gas, or, more accurately, limiting the return from the property by a rate-base method, whether it be depreciated cost or fair value or some other method. Regulation by the Commission would also include the keeping of books and records in conformity with the rules of the Commission, the filing of tariffs, the making of periodic reports, and obtaining certificates of convenience and necessity.⁴⁴ No one knows how far the regulations would go, or

when the figures were 65 and 35 per cent. No statement has been found giving a recent figure, but the percentage of proved reserves owned by the long lines is likely less than 25 per cent, with 75 per cent or more owned by independents.

⁴² Holloway, *State Regulation of Minimum Field Gas Prices*, 4 OKLA. L. REV. 69 (1951). The figure probably is smaller now, for the long lines owning or controlling properties have not increased materially their productive capacity, while independents have drilled many wells, increasing reserves and producing capacity.

⁴³ In GAS FACTS, 1952 DATA, page 5 and Table 26, it appears that in 1945 the long-lines produced 35 per cent of their needs, but by the end of 1952 produced only 15 per cent. Similar figures were given for a group of companies by Falck, in *Impact of F.P.C. Rate Regulation on Natural Gas Production*, 51 PUBLIC UTILITIES FORTNIGHTLY 420 (Mar. 26, 1953). As to the 12 companies listed by Falck that were operating in 1942, the percentage of production by them at that time was about 30 per cent. It dropped 18.6 per cent in 1951. Falck listed five large companies that began operations after 1942 that produced no gas from their own properties, and purchased all of their supply. Two other large companies were shown to have produced an average of about 21 per cent of their supply. These data would indicate that more than 75 per cent of the proved reserves is owned by independent producers.

⁴⁴ 15 U. S. C. §717(c), (g), (i), and (f). Francis, in a brief filed in 1946 with the Federal Power Commission in NATURAL GAS INVESTIGATION, DOCKET G-580; Head, *The Federal Power Commission, the Federal Courts, and the Independent Producer*, Petroleum Engineer, Sept. 1953, p. A-37 (the article will also be published in the issue of the Quarterly Bulletin of the Interstate Oil Compact Commission that reports the meeting of the Commission in Billings, Mont., in August 1953); Newcomb, *Some Aspects of Regulation of Public Utilities in the State of Texas*, 5 BAYLOR L. REV. 335, 356 (1953); Jacobs, *Problems Incident to Marketing of Gas*, a paper delivered Jan. 28, 1954, before Southwestern Legal Foundation, to be published in FIFTH ANNUAL INSTITUTE ON OIL AND GAS LAW AND TAXATION (1954).

the financial burden, apart from the effect of permissible return, that compliance would likely impose, but the burden would be heavy, especially with respect to properties producing both oil and gas from the same wells or properties.

To appraise the probable results of the refusal of many independent producers to sell gas to the long lines, effected in part by cancellation of existing contracts, and in part by refusing to make contracts for such sales unless conditions and prices improve, several facts are significant. About one-third of the gas reserves is oil-well gas,⁴⁵ and more than 80 per cent of the gas in the long lines is produced by independents,⁴⁶ many of whom are large oil companies,⁴⁷ and even now some 40 per cent of the gas produced by large sellers does not go to the long lines, but to local customers and uses.⁴⁸ Prior to World War II, approximately 56 per cent of the gas produced came from gas wells, and 44 per cent from oil wells, but by 1951 the percentages were 67 per cent and 33 per cent.⁴⁹ Among the reasons that may be given for the change are: an increase in the number of wells drilled; deeper drilling, with an increasing percentage of discoveries of gas-condensate pools; an increase in local use of oil-well gas; and better conservation practices, including the return of oil-well gas to producing reservoirs.

Unquestionably, independent producers prefer to sell locally, and local markets in the southwest have expanded as a result of the material increase in population in the area, and the industrial growth, especially in the petrochemical industry, that has come about in recent years. Scientists have developed many processes for making products from, or by the use of, hydrocarbon molecules. Natural gas contains these hydrocarbons in suitable form for separation or rearrangement, and for combining with other molecules or atoms to make many useful synthetic products. Among these are rubber, ammonia, formaldehyde, nitric acid, plastics, liquid fuels, fibers and threads like Vinyon and Saran, solvents, detergents, insecticides, fertilizers, ink, drugs, and cosmetics.⁵⁰ The plants, for the most part, have been located near the sources of gas, especially in the Gulf coasts of Texas and

⁴⁵ E. I. Thompson, *Consumer-Producer Relations in the Natural Gas Industry*, a paper given before a joint meeting of the Natural and Manufactured Gas Departments, American Gas Association, at Atlantic City, on Oct. 27, 1952; PRESIDENT'S MATERIALS POLICY COMM'N, RESOURCES FOR FREEDOM, *op. cit. supra* note 30, at 16; Report No. 8 in booklet form, page 18, of reserves on Dec. 31, 1953, prepared by American Petroleum Institute and the American Gas Association.

⁴⁶ See note 43 *supra*; the Record in the *Phillips* case (*supra* notes 5 and 8) in the Supreme Court of the United States, at 728-731, gives 76.75 per cent as a recent figure. In Comment, *supra* note 32, at 1485, an estimate of 77 per cent for 1952 was made, which turns out to be low.

⁴⁷ Under the definition of independent producer given in note 1, large integrated oil companies could be classified as independent producers, and many of them have been so classified by the Federal Power Commission. Comment, *supra* note 32, at 1490.

⁴⁸ Walter Maynard, partner in Shearson, Hammil & Company, New York, gives a 40 per cent figure in a statement, *THE ECONOMIC REALITIES OF NATURAL GAS REGULATION* (June, 1953) (in booklet form). No published statistics as to such sales have been found.

⁴⁹ PRESIDENT'S MATERIALS POLICY COMM'N, RESOURCES FOR FREEDOM, *op. cit. supra* note 30, at 16-18; GAS FACTS, 1952 Data 5 and 27.

⁵⁰ Pew and Dotterweich, *Science in Natural Gas*, a paper before the Texas Academy of Science in Galveston in Nov. 1944; Zimmermann, *op. cit. supra*, note 17, at 566; SMITH-WIMBERLY 1948 REPORT, *op. cit. supra* note 41, at Part ix; STOCKTON, HENSHAW AND GRAVES, *op. cit. supra* note 17, at 66; *Boom in Natural Gas*, in *Life*, Mar. 10, 1952, p. 89.

Louisiana. The gas that goes to these plants, though not yet a large percentage of the gas marketed, leaves less gas available for the long lines.

As already stated, the long line that produced its own gas has been permitted to earn 6½ per cent or less on the depreciated cost of the properties of the company. The company was permitted to take into account, as expenses of doing business, the purchase price, carrying charges, and, according to statements made by Commissioners, the cost of dry holes on non-producing properties, at least those acquired by the company as a natural gas company. It should be made plain that the Natural Gas Act does not require that the depreciated cost method must be used in fixing permissible profits, but, since it has been used, and has been upheld by the Supreme Court of the United States with respect to long lines that produce from their own properties, the independent producer who contemplates selling to such a company is justified in thinking that he will receive the same treatment if there is jurisdiction over him, with a right to limit his return. Any method of limiting return means fixing the prices at which he sells his gas. As already pointed out, the Federal Power Commission recently switched to use of average weighted field price applicable to Panhandle Eastern Pipe Line Company, but Senator Ferguson of Michigan has introduced a bill, S. 3178, requiring in all cases the depreciated cost method. Uncertainty exists as to what method will, may, or must be used.

Space does not permit a discussion of the many difficulties that would be met, and the burdens and expenses that would follow, if the Federal Power Commission should attempt to determine depreciated cost with respect to many thousands of properties producing gas-well gas and oil-well gas that are owned by many thousands of producers. Assuming that jurisdiction does not exist to deal with oil production, but only to fix returns on properties producing gas that goes to long lines, what part of the cost and expenses would be assigned to the unregulated oil production, and what part to gas production, when both come from the same well? If the value of the oil produced is more than the cost of the property and all expenses of operation, would any value be assigned to the gas, or any expense of operations be charged to gas production?⁵¹ No standard used or suggested for restricting the returns, or for fixing the rates of a public utility, appears to be applicable to the business of finding and producing oil and gas.⁵²

No doubt a producer would have less cause for complaint if "fair valuation" of properties should be the base for rates, and even less cause if the value of gas should

⁵¹ Where an affiliate of a natural gas company, a long line, extracted some of the heavier hydrocarbons from the gas in the company's lines, an activity considered by the court to be a part of the business of transporting and delivering gas, it was held that operating expense of the long line should be credited with the profits made by the affiliate as a result of the extraction. *Cities Service Gas Company v. Federal Power Commission*, 155 F. 2d 694, 703 (10th Cir. 1946), *cert. denied*, 329 U. S. 773 (1946). Independent producers wonder whether the holding might be extended so that, as to gas sold from oil wells, the profit from the oil would be credited in a manner to reduce the permissible return or price for the gas sold to a long line, on the theory that the production of the oil was a necessary incident to the production of gas for sale to the long line.

⁵² H. K. Hudson, Bartlesville, Oklahoma, discussed at length the subject in his article, as yet unpublished, entitled *The Impossibility of Regulation of Field Prices Received for Gas by Producers and Gatherers on Any Standard Other Than Caprice*.

be its market value;⁵³ nevertheless, he would not welcome the regulation of his operations and business. Apart from hazards incident to limitation of returns or profits, he would be subjected to other burdens and costs that have been mentioned, such as making of reports, keeping books and records as required, and obtaining permits and certificates.

It is significant that the Federal Power Commission has not only declared that it had no jurisdiction over independent producers, but has also been reluctant even to suggest that it be given jurisdiction.⁵⁴ The inherent administrative difficulties and the likely consequences of attempting regulation of thousands of independent producers were pointed out in the Smith-Wimberly report.⁵⁵

LOGICAL CONSEQUENCES OF FEARS OF REGULATION

As long as the independent producer's fear of regulation is justified, many, perhaps all, of the following are logical consequences:

(1) A stifling of the search for new gas reserves, and virtual discontinuance of the development of proved reserves for the purpose of producing gas.⁵⁶

⁵³ It must not be supposed that the determination of the market value of gas in the field on a given date is an easy task, as it usually is for oil. Oil is ordinarily sold on a day to day basis at prices that are posted by purchasing companies. The price is normally the same in any field for the same grade of oil. Posted prices for oil may be changed at any time, and the purchaser or the seller may cancel the contract of sale at will. As a general rule, it may be said that the market value on any date for oil in a specified field is the posted price. No such system prevails as to gas. It is sold under contract for specified periods, such as one year, five years, ten years, or twenty years, with varying privileges and burdens. An interstate transmission company will not be given by the Federal Power Commission a certificate of convenience and necessity, a prerequisite for the building of an interstate transmission line, unless it appears that by contracts or otherwise it will have enough gas available for the public to be served. The price applicable on a specified date under a contract executed many years ago after arm's-length negotiations may be considered as the market price of the gas purchased on that date under the contract, but that would not necessarily be the market value of other gas in the field not under contract, but available for the market. And what if there were five contracts to be considered in order to make a finding on a certain date of market value of gas not under contract? Contracts vary materially in dates, duration, quality of gas, pressure on delivery, and many other provisions; consequently, it should not be assumed that, merely by comparing them, it is easy to determine on a specified date the market value of gas in a field, though an arm's-length contract executed about that date would simplify the problem. This is not to say that the market value of gas in a field on a specified date cannot be determined. It is to say that many factors are involved that must be appraised. For a discussion of the meaning in royalty clauses of "value," "reasonable value," "market price," and "market value," see Comment, *Value of Lessor's Share of Production Where Gas Only Is Produced*, 25 TEX. L. REV. 641 (1947); and Siefkin, *Rights of Lessor and Lessee With Respect to Sale of Gas and As to Royalty Clauses*, in *FOURTH ANNUAL INSTITUTE ON OIL AND GAS LAW AND TAXATION 181* (SOUTHWESTERN LEGAL FOUNDATION, 1953).

⁵⁴ The printed report of Commissioners Olds and Draper made in 1948 in *Natural Gas Investigation* (Docket No. G-580) recommended, at page 12, that no further amendment of the Natural Gas Act be made. There was no suggestion of any necessity for regulating sales made at arm's-length by independent producers. Moreover, it was said, at page 117, that the Commission, in determining rate base for an interstate transmission line, had consistently allowed the entire price paid under an arm's-length sale by an independent producer. The SMITH-WIMBERLY 1948 REPORT, *op. cit. supra* note 41, at page 26, said that, nevertheless, it would be advisable to amend the Act to make clear that no jurisdiction existed over independent producers merely because they sell gas to a long line.

⁵⁵ SMITH-WIMBERLY 1948 REPORT, *op. cit. supra* note 41, beginning at page 217. Others have discussed the subject: Rex Baker, *A Free Market for Natural Gas Is Essential*, a paper before the New Mexico Oil and Gas Association, Dec. 2, 1953; Wheat, *supra* note 37, at 37-39; Hudson, in paper cited, note 52 *supra*.

⁵⁶ Thompson, in the paper cited in note 45 *supra*, says that the average price (6c) for gas in the

(2) Sales of properties in gas fields will be made in order to obtain their market value. The purchaser may be willing to sell gas to a long line, even if jurisdiction of the Federal Power Commission attaches, since his cost, for fixing his permissible return, will be what he paid for the properties, less depreciation. On the other hand, he may not be willing to accept other burdens of regulation, or to make a long term contract with an interstate line that cannot be cancelled.

(3) Some sellers of gas will exercise the right given in contracts to cancel them, and some contracts will automatically be cancelled, if the Federal Power Commission has or threatens jurisdiction over the seller.

(4) Underground storage of gas in the state where produced, and the return of great volumes of gas to the producing reservoirs, will increase.

(5) Sales to long lines will be limited as far as possible to instances where the investment is great and approximates fair value.⁵⁷

(6) Sales for local use will increase, leaving less that might go to long lines.⁵⁸

(7) Most important of all, there will likely be a shortage of gas for the long lines, and higher prices to the ultimate consumers.⁵⁹

Panhandle has retarded further development. The writer knows of a number of gas fields where development was delayed because the price of gas was too low to justify the expense of development. Kayser, in *The Exploration and Discovery of Natural Gas*, 52 PUBLIC UTILITY FORTNIGHTLY 674, 679 (Nov. 5, 1953), says that exploration and production of natural gas cannot be justified if the return is limited to 6½ per cent.

⁵⁷ For instance, a producer who acquired his property by a small investment, say \$10,000 or less, when the area was wildcat, would be inclined to refuse to sell his gas to a long line if his rate base should be \$10,000, and his return limited to 6½ per cent. However, his neighbor with a like property, for which he paid \$2,000,000, might be willing to sell his gas to a long line, and risk jurisdiction and a 6½ per cent return on depreciated cost. See note 38 *supra*.

⁵⁸ Maynard, in the article cited note 48 *supra*, says that each of several plants on the Texas-Louisiana coast uses more gas than Detroit.

⁵⁹ Reasons for anticipating a shortage and higher prices have been discussed. It may be assumed that a material increase in field prices would justify the charging of slightly higher prices to consumers, but it does not follow that the increase in field prices would be bad policy or would result in unreasonable prices to consumers. As already pointed out, notes 32, 33, and 34, *supra*, and applicable text, the consumer price level is quite low in most areas in comparison with competitive fuels, and the field and consumer prices are about the same level as in 1939. Six cents M.C.F. was the average in the Panhandle, and about 7¼ cents was the average for all gas bought in Texas and Louisiana by one long-line for the year ending April 30, 1952. Eighty per cent of the gas produced in Texas in 1951 was sold for less than 7 cents M.C.F. STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra* note 17, at 263. The long line and the local distributor are responsible for most of the charge to the consumer. Baker, *supra* note 26, at 11. The average price in the United States for residential consumption in 1949 was 67 cents M.C.F., exclusive of any tax. STOCKTON, HENSHAW, AND GRAVES, *op. cit. supra*, note 17, at 49, Table 22. A survey made in 46 cities by the Independent Natural Gas Association, dated Sept. 18, 1953, to get a comparison of a season's househeating costs for gas, fuel oil, and coal, found that the average price for gas in those cities was 76 cents M.C.F. in 1951. World Oil, Feb. 15, 1954, p. 156, gives the same figure for 1951, and 81 cents M.C.F. and 91 cents M.C.F. for 1952 and 1953. The United States Bureau of Mines found the average residential price in 1952 to be 83.1 cents M.C.F. MINERAL MARKETING REPORT MMS 2229, MARKETED PRODUCTION OF NATURAL GAS (1954).

A lower average prevailed for commercial and industrial use, partly because of greater volume, less expense to service, and the right to interrupt delivery to maintain proper service for domestic use. K. S. Adams, in a speech in Kansas City in Oct. 1951, printed in pamphlet form, gives these domestic consumer prices in the area served by Panhandle and Mid-Continent gas: Madison \$1.67 M.C.F., Milwaukee \$1.43 M.C.F., and Racine \$2.18 M.C.F. Unquestionably, the field prices for gas are generally low, and are a small fraction, 10 per cent or less, of the cost of gas to consumers, and especially householders. To repeat questions asked by many independent producers: Why regulate the field price

CONCLUSIONS

1. The independent producer of gas is not inclined, and should not be expected, to give away his gas or to sell it involuntarily at a price that is less than its market value or fair price in the field in a free market. Indeed, he is reluctant to sell even at market value or a fair price to an interstate transmission company, because of fear of regulation under the Natural Gas Act, including limitation of returns, equivalent to fixing of the price for the gas sold, and probably at a price less than the contract price.

2. The ultimate consumers of gas and the Federal Power Commission should be primarily interested in an adequate supply at attractive or reasonable prices, rather than an inadequate supply, whether the prices be bargain or quite high.

3. If the independent producer of gas knew that the Natural Gas Act does not, and likely will not, give jurisdiction merely because he makes arm's-length sales to an interstate transmission line at or before the time when, and the place where, gathering ends, and that he could sell his gas in a free market, in competition with other producers and other fuels, it is reasonably certain that the almost insatiable demands for gas by the ultimate consumers will be met for many years, as far as producers are concerned, at field prices that are fair.

4. The independent producer of gas is justified in desiring, by amendment of the Act or otherwise, the removal of the fears of regulation that may take place if he sells his gas to an interstate transmission line, and it would appear that the ultimate consumers of gas would, in the long run, be benefited by encouraging the removal of those fears.

of gas, or fix the return of an independent producer, and not take similar action with respect to goods and services purchased by the long lines and the distributors; and why adopt a rate-base method for producers of gas, independents or long lines, that generally results in the lowest possible return on the fair value of the properties of the producer, and may result in no return at all?