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THE COST OF CAPITAL AS AN ELEMENT OF FAIR RATE OF RETURN FOR NATURAL GAS UTILITIES IN THE UNITED STATES OF AMERICA

by

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Foreword

As an academic document this study represents the culmination of a wholly fruitful course of instruction received over a period of years in the Graduate School of The American University. At the same time it may also be described as the culmination of a quarter of a century devoted to following the financial affairs of the public utility industries. During this period the author has been an investment counsellor, specializing in public utility securities; the editor of financial publications dealing with the public utility business, and an executive of a company investing in public utility issues. For the past six years he has been a staff expert and witness on rate of return for the Federal Power Commission, and he is presently head of the Finance Section of the Division of Finance and Statistics of that Commission.

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CHAPTER I

THE PROBLEM OF FAIR RETURN

The problem of finding the fair return for private capital invested in regulated public utility enterprises, more particularly the problem of how much that return should be, is a matter which has long engaged the attention and interest of those who follow the fortunes of the public utility industry.

The public utility business in the United States, or that portion of it which is devoted to the furnishing of gas, electric and telephone service is essentially a private affair. That is to say, the companies which provide these services — and there are several hundred of them, large and small — are privately owned and operated.

No public bureau dictates the design, construction and placement of their gas mains, generating stations or telephone exchanges. This is accomplished by the managements of these companies, under the supervision of company officials selected by their boards of directors. No public official, political party or "central committee" chooses their executive personnel. They are privately managed from top to bottom.

What is more to the point they are privately financed. The public credit has not been pledged in any way to secure their construction. All of the money which has gone into their service facilities, which are currently said to represent an investment of ap-

proximately sixty billion dollars, has been drawn from private savings via investment channels. What is more, it has been paid in voluntarily. There has been no allocation of the people's savings to public utility construction.

Exceptions to all these statements must, of course, be allowed in favor of such large public power projects as the Tennessee Valley Authority, the Grand Coulee and others which have been built with public funds to satisfy some particular political purpose. Exceptions must also be allowed in the numerous instances where gas, electricity or telephone service is provided by a municipal department, gas district or rural cooperative. But these serve relatively small portions of the population. It is on private companies that most of the people in the United States rely for gas, electric and telephone service; it is the private companies which serve all but a few of the largest cities and most of the area within the nation's borders.

Taken as a whole they represent, in the opinion of this student, one of the triumphant achievements, during the twentieth century, of private enterprise and private capitalism, American style.

Public responsibilities. - In spite of the dominantly private character of the nation's public utility undertakings they are, nevertheless, public service companies and as such they have certain responsibilities towards their communities. One is to provide service to all applicants, without discrimination; another is to charge just and reasonable rates. Still another is to provide the best service possible,

a fourth is to keep abreast of the development of their communities so as to grow, not with them, but somewhat ahead of them. Necessarily the attention which the public utilities give these responsibilities is going to have a substantial impact upon the economic life of the communities which they serve. For these reasons and others, based on long experience, most American communities keep their public utility companies under one form or another of regulatory control.

Rates and charges for service. - One aspect of the public utility business which is almost always under control is the matter of rates and charges for service.

Not only are rates important from the viewpoint of the community; they are also important from the point of view of the company rendering the service because in rates lie the key to profits.

This is the crux of the matter of rate of return. Since the average public service company has no other source of revenues than the charges which it makes for the services which it renders, it follows that the return on capital, if any is to be provided, must be included in is rates. Herein also lies one of the chief differences between the public utility business and other forms of business enterprise. Since the public utility's return cannot, due to the nature of its position, be determined under competitive conditions it must, perforce, be determined by regulatory fiat. How much should it be ? What is a fair rate of return ? What rate of return will be fair to investors and customers alike ?

Return must encourage private investment. - It is fairly apparent that the return allowed on capital invested in public utility companies, or rate of return, which amounts to the same thing, must be such as to permit and encourage the continued flow of savings through investment channels and into the business. At least this necessity must be observed so long as this business continues to grow and need capital funds. The consequences of not being able to attract capital are, to some extent, presently evident in the parlous situation of the once prosperous traction business. Although it continues to provide a necessary service in many communities, it nevertheless finds it extremely difficult to attract capital. In consequence it seems to be headed towards municipal ownership.

Investors' advantages. - The investor who presently furnishes the money for public utility construction seemingly has the upper hand. He is not interested in the social aspects of the situation, except to avoid getting entangled therein. He wants the best possible return on his capital, consistent with the risks he is willing to assume. The strength of his position lies in his complete independence. He may refuse to buy the securities of public utility companies, thereby making it difficult for them to raise capital. He may also sell off those public utility securities which he does own, thereby creating uncertainty in the market place, and giving compound effect to his distaste.

Consumer interest. - The other principal party-at-interest in the public utility business is the consumer. He is interested,

primarily, in satisfactory service at low rates. He is seldom concerned with "fair return" unless he happens to have, also, a personal stake in the public utility business. Unlike the investor, however, he is unable to "shop around" for the best possible deal for public utility service; perforce he must subscribe to the service offered by the holder of the local franchise, or go without. He may, if he so desires burn candles instead of electricity for light; write letters instead of telephoning, or use coal instead of gas or oil to heat his home, but such substitutions, in this day and age, are hardly inviting.

The consumer's weapons. - Against mistreatment the consumer has several weapons. If he is dissatisfied with the service he is receiving from the local public utility he may complain to the appropriate regulatory agency.

Few individuals carry their complaints beyond this stage. It is usually too expensive to do so. However, it may be noted that where wholesale service is concerned, and the consumer is a corporation with adequate funds to pursue the issue, such inhibitions may not apply.

The other remedy at the disposal of individuals is to exert political pressure. This effort usually requires leadership; however, those who recall the successful attack upon the public utility holding companies carried out by the New Deal government during the 1930-1935 period, will hardly deny the effectiveness of this weapon.

Fixing the return. - In present day practice the task of finding the return, or rate of return for capital devoted to public utility operations which will, at one and the same time, attract the investor and soothe the rate payer, is usually undertaken by a public service commission or similarly constituted body the members of which owe their offices to popular election, or to appointment by some popularly elected official.

Theirs is a difficult task, made none too easy by reason of the fact that objective standards whereby to judge the fairness of a particular rate of return which they might devise have, until recently, been wholly lacking.

Fair return on fair value. - For approximately half a century, prior to 1944, the guiding legal principle in the matter of fair return was contained in a somewhat ambiguous ruling handed down by the United States Supreme Court in 1898 in the matter of Smyth v. Ames.[1] That decision said in substance that public utility rates to be constitutional, and therefore not confiscatory, must be such as to afford a fair return on the fair value of the property used and useful in rendering the service.

But what was fair value ? And what would be a fair return on that value ? The decision listed numerous principles which were to be considered, but it neglected to indicate how they should be combined

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[1]169 U.S. 466 (1898).

in order to produce finite results. Ultimately, then, the matter of fair return boiled down to a matter of judgment, and when judgments differed, as they often did, extended litigation could ensue, and in such contests victory very often went to those who could sustain the legal effort the longest. Consumers in moderate circumstances were seldom able to engage in such contests; the ends of justice were thus ill served.

During the ensuing decades fair return, or fair rate of return, developed into an economic, legal and political hodgepodge in which legal considerations received far greater attention than either of the other two, principally because the law provided well defined avenues for the enforcement of its decrees, while the consequences of slighting economic or political considerations took longer to work out.

The Hope decision. - In another significant decision, rendered early in 1944, in the matter of Hope Natural Gas Company[2], the Supreme Court was apparently intent on providing more objective standards for the determination of fair return than had been provided under Smyth v. Ames. On this occasion the Court said that the rate of return should be equal to that being received at the same time, and in the same region, on investments presenting similar risks and uncertainties. The Court added that the return should also be sufficient to

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[2]320 U.S. 591 (1944)

insure confidence in the financial soundness of the enterprise, so as to enable it to attract capital.

The Court's views concerning rate of return, as set forth in this opinion, will be examined in greater detail in a subsequent chapter of this study. Similar views had been expressed by the Court some years earlier in its opinion in the matter of Bluefield Water Works & Improvement Company[3] without having been noticeably influential on regulatory doctrine.

Of additional interest, insofar as the purposes of this study are concerned, is the fact that the Court's opinion in the Hope case was based on, an substantially upheld, an opinion issued in 1942 by the Federal Power Commission[4] pursuant to the authority vested in it by the Congress in 1938 to regulate the interstate transmission and sale for resale of natural gas.[5] The Federal Power Commission case leading up to that decision was, in fact, one of the first cases to be heard by it pursuant to that authority. Moreover in deciding as it did in this matter, the Supreme Court substantially upheld the Commission despite a reversal which the Commission had suffered in the Court of Appeals.[6]

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[3]262 U.S. 679 (1923).

[4]3 F.P.C. 150.

[5]The Natural Gas Act (1938); 15 U.S.Code 717-717w.

[6]134 F2d., 287 (1943)

Cost of capital emerges. - The Hope decision is now regarded as a regulatory milestone of equal, if not greater importance than Smyth v. Ames. Some authorities, in fact, hold to the opinion that it has completely outmoded that earlier doctrine. Whatever the ultimate view in this respect may be the fact is that it provided the basis for an entirely new approach to the question of fair return. In course of time this was to become known as the "cost of capital" approach, and the Federal Power Commission, which was the victor in the Hope case, was to become one of its leading exponents.

What is meant by "cost of capital" will be set forth in considerable detail herein. The Federal Power Commission's first opportunity to apply it to fair rate of return determination occurred in 1952 when it was confronted with the necessity for arriving at decisions in a series of cases, involving the rates charged by three prominent natural gas pipe line companies.[7]

In these decisions, which will be examined in detail during the course of this study, the Commission defined the returns to which these companies were to be entitled in terms of sums believed to be sufficient, but only just sufficient, to enable them to meet their capital costs.

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[7]The companies concerned were: Northern Natural Gas Company, Mississippi River Fuel Corporation and Colorado Interstate Gas Company. Each was a well established unit of the natural gas pipe line business. The decisions will be discussed in Chapter XI hereof.

Impact. - The natural gas pipe line business was, at that time, undergoing tremendous expansion and evidencing an enormous appetite for capital funds. Such was the nature of these decisions that they caused considerable concern in the industry and elsewhere, for it was feared that adherence to the cost of capital doctrine, with its whittling down of the rate of return, particularly for the common equity, or venture capital, would make it difficult for the industry to continue to obtain funds with which to continue its growth.

Although this has not turned out to be the case, thus far, suspicion of the new doctrine is still evident, for there is some reason to doubt whether it is universally applicable. Likewise there are many who still prefer the broader latitude of Smyth v. Ames. Notwithstanding all this, the Federal Power Commission has given every indication that it intends to continue to make capital cost findings the basis for fair return determination unless and until the courts direct otherwise. This they have not done in any significant fashion; in fact present indications are that they are well satisfied with the logic of this approach.

The Proposition

The following pages are to be devoted to an examination of the subject of fair rate of return, but more especially that aspect of it which is currently illustrated by the practice of the Federal

Power Commission in attempting to resolve the issue by reference to capital costs.

Should it turn out that the cost of capital approach to what has heretofore been largely a judgment matter fully satisfies economic, judicial and practical concepts of what a fair return should be, then this study will have served a useful purpose, for it will point the way for rationalization of what has heretofore been an exceedingly vexatious problem in the field of public utility regulation.

Should this thesis not be entirely fulfilled it is hoped that the examination of the subject which is about to be undertaken will, nonetheless, serve to develop the weaknesses of this approach, and outline the limits within which it may be reliable and useful.

CHAPTER II

DEFINITIONS

This chapter will be devoted to an explanation of certain of the terms commonly employed in discussing rate of return.

Rate of Return

The rate of return of a public utility, according to Foster and Rodey, eminent authorities on public utility accounting, is the percentage relationship of a public utility company's return to another quantity called its rate base.[1] Return and rate base will be more fully explained presently.

Derivation of the factor called rate of return follows the simple mathematical formula

$$r = R/B \times 100$$

where R is the return, B the rate base and r the rate of return. Of necessity R and B must be expressed in comparable units as, for example, dollars. The purpose of multiplying the right hand side of the expression by 100 is to bring the result out in percentage terms.

The foregoing expression will, on occasion, be referred to herein as the rate of return formula.

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[1] J. R. Foster and B.S.Rodey, jr., Public Utility Accounting (New York: Prentice-Hall, Inc., 1951), p. 26.

Return

The return of a public utility represents, in a general sense, that portion of the revenues derived from the sale of its service which is to and can be used for the reimbursement of those who have furnished it with its capital funds.

From an accounting standpoint the authors just quoted define the return of a regulated public utility company as follows:

> The amount in dollars which remains after the utility has provided for the payment of operating expenses, and accruing depreciation and taxes, but before income deductions, such as interest and the amount available for dividends.[2]

Return is sometimes also referred to as the net earnings from operations, otherwise operating income. The actual return, so say these authors, is the return earned during a conventional accounting period. A year is assumed unless a longer or shorter period is specified.

Derivation of the return. - The derivation of the utility's return from operating revenues, or that which it receives from the sale of its services, may be illustrated in the abstract by an arrangement of accounting terms such as appears at the top of the following page.

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[2] Ibid., pp. 26 and 27.

DERIVATION OF THE PUBLIC UTILITY RETURN

	Operating Revenues
less:	Operating expenses
	Depreciation
	Depletion
	Taxes, including Federal income taxes
* leaves:	Net Operating Income, otherwise the Return

*Note the position of this line and see discussion of "Below the line" on page 17 , infra.

Cost of service. - The sum total of a public utility company's operating expenses, depreciation, depletion and taxes (including Federal income taxes), together with its net operating income, otherwise its return, is sometimes referred to as its cost of service. This is a term used frequently in public utility rate cases where it will often appear in the form of an estimate. The usefulness of this estimate will be more fully described in the following chapter which is devoted to a discussion of the rate-making procedure.

Disposition of the return. - According to basic concepts the principal items to be paid from or charged to a public utility company's return are its capital charges. These include (1) interest and other charges relating to its borrowed capital, or long-term debt; and (2) dividends on its stock. What is left over after these payments have been made becomes earned surplus or, as some accountants now prefer to call it, retained earnings.

The disposition of a public utility company's return, or net operating income, is illustrated in accounting form below. In the interest of simplification the possibility that the utility may have had other income has been disregarded.

DISPOSITION OF A PUBLIC UTILITY COMPANY'S RETURN OR OPERATING INCOME

	Net Operating Income, otherwise Return
less:	Interest on Long-term Debt
less:	Amortization of Debt Discount and Expense
plus:	Amortization of Debt Premium
less:	Interest on Debt to Associated Companies
plus:	Interest Charged to Construction
less:	Taxes Assumed on Interest
leaves:	Net Income
less:	Dividends
leaves:	Earned Surplus, sometimes called Retained Earnings

In the interest of technical accuracy it seems appropriate to note that the foregoing illustration omits the procedure usually followed by accountants, and prescribed by the Federal Power Commission in its Uniform System of Accounts for Natural Gas Companies[3] of first crediting net income to earned surplus, and of charging all dividend payments to that account.

A further point to be noted in connection with the foregoing is that the return of a regulated public utility company represents the sum available for all capital charges, including therein interest and

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[3] Uniform System of Accounts Prescribed for Natural Gas Companies Subject to the Provisions of the Natural Gas Act, Effective January 1, 1951 (Federal Power Commission, Washington 25, D.C.).

dividends. By contrast, the word return, when it is used in general business discussions, more often than not means profits.

Difference between "return" and "profits." - Regarded in this light the return of a public utility would be one thing, its profits another, and the quantitative difference between the two would be the interest and other charges related to the borrowed capital. These are called income deductions in public utility accounting.

This distinction is often an important one because large portions of the capital employed by public utility companies, ranging up to 75 per cent in some instances, may be borrowed capital, or long-term debt. In consequence the relationship of a public utility company's profits to its invested capital will not usually be comparable to the return, so-called, or relationship of profits to net worth which is so often used to demonstrate the profitableness of a non-public utility undertaking, having little or no debt.

"Below the line." - The return of a public utility company is sometimes also referred to as the "amount below the line," the line being that which is inserted in income statements to separate operating income, otherwise return, from the items usually shown above it, such as operating expenses, depreciation and taxes.[4]

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[4]See the tabulation headed "Derivation of the Public Utility Return" at the top of page 15 supra, for an illustration of this point. The "line" would be the one just under "Taxes Including Federal Income Taxes," and immediately above "Net Operating Income, otherwise the Return." The position of "the line" is indicated by an asterisk (*) and a footnote.

If there are no items of doubtful propriety in a public utility company's operating expense deductions, if depreciation and depletion have been estimated to the satisfaction of the reviewing authority, and if tax accruals are indisputable and accurate, then the sum "below the line," i.e., the operating income, will be the true return for the period covered by the income statement. If, as sometimes happens, the public utility company and its regulatory agency are in disagreement as to the accuracy of some of these accruals, or as to the inclusion of certain items as operating expenses, the regulatory agency may cause them to be eliminated from cost of service and placed below the line. The effect is to remove them from the category of outgo which supports the rate level, and to charge them against that portion of the income from operations which accrues to the benefit of those who have furnished the enterprise with capital. In the final interest it will be the common stockholders who will bear the brunt of such charges.

Thus, in a certain sense, the "line," so-called, represents an accounting barrier or boundary between the interests of the customers who provide the revenues, and the interests of the investors who have furnished the capital funds, and who share in the return in accordance with the order and precedence of their claims.

Rate Base

The rate base of a public utility is a value assigned to its properties for rate-making purposes. Foster and Rodey, previously quoted, say it is a value to be arrived at by

> ". . .means independent of earnings capacity under existing charges for service and of existing values in the general economic sense."

The authors go on to define "existing values in the general economic sense" as the market or commercial value; the price an informed purchaser would pay in an arm's length transaction.

The "means independent of earnings capacity" which they say should be applied to the determination of the rate base, include:

> ". . . the costs of the property, tangible and intangible, devoted to the public service. The original cost, the prudent investment, the estimated historical cost, and the present cost of reproduction of the property are all recognized by regulatory practices as evidence of the rate base. The consideration given to each of these types of cost evidence varies widely with the regulatory policy and requirements of law."[5]

Valuations for rate-making purposes. - Since the principal reason for finding a rate base is to establish the return to which the utility is to be entitled, the method used in valuing a property for rate-making purposes is of considerable importance. In a period of rising prices investors would usually seek to have the properties valued as high as possible, so as to maximize the investment return. This usually requires a reproduction cost valuation. Under the same circumstances consumers would usually seek to have the value fixed as low as possible so as to minimize rates. This usually calls for an original cost approach. In depressed periods each party-at-interest might be expected to take an opposite attitude.

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[5]Ibid., p. 27.

All methods cited have some basis in fact. Reproduction values, for example, can be, and usually are, supported by engineering estimates. Original cost, prudent investment and historical cost are developed by reference to the books and records of the company involved.

Another method of valuation, called the fair value method, has been much used by regulatory authorities. This is almost invariably a judgement figure, decided upon more or less arbitrarily by the commission or court, after listening to the testimony of various appraisers. It is frequently a compromise between the highest and lowest valuations suggested during the course of a rate proceeding. It is fair principally because the commission or court finds it to be fair.

Debate over the proper method to be used in valuing the properties of a public utility company for rate-making purposes goes on endlessly. Professor J. C. Bonbright, an authority on the subject of valuation, discusses the subject at considerable length in his treatise entitled Valuation of Property. His conclusion is that even though the method to be employed should, usually, be designated by economists, it has usually been the courts which have had the final say.[6]

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[6]J. C. Bonbright, Valuation of Property (New York: McGraw-Hill Book Co.,Inc., 1937), II, Chaps. XXX and XXXI.

Original Cost

Reference to original cost in fixing a rate base for rate-making purposes is a matter of law, or policy, in approximately half the states.[7] The Federal Power Commission, which regulates interstate electric and natural gas pipe line companies, adheres strictly to the principles of original cost. Companies subject to its jurisdiction are required to keep their books on this basis. It has defined rate base in one of its recent decisions, as follows:

> ". . . the rate base is the actual legitimate cost of the property used and useful in furnishing the service, less the existing depreciation in such property, plus the working capital necessary to render such service."[8]

One of the principal virtues claimed for original cost is that it has its foundation in ascertainable fact. Almost any other method which might be employed permits a mingling of fact and fancy in proportions which tend to vary with the purposes for which the valuation is being undertaken, and the integrity and objectivity of the persons having the matter of valuation in hand.

Opponents of original cost argue that it is too rigid, and that for one thing it fails to give consideration to the rise in the value of capital assets which has occurred since the end of World War II. Reserves for the depreciation of properties bought at earlier stages of a period of rising prices, are usually inade-

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[7] See State Commission Jurisdiction and Regulation of Electric and Gas Utilities (Federal Power Commission, Washington) Table B.

[8] Detroit v. Panhandle Eastern Pipe Line Co., 3 F.P.C.,273,280.

quate to provide for their replacement at later stages of the price upswing. Of course, under reverse circumstances, the reserves might tend to be more than adequate, but this seldom occurs. The complaint is probably a legitimate one, and thus far no regulatory agency which is dedicated to original cost seems to have discovered how to deal with it.

Net investment rate base. - Another expression sometimes used in regulatory procedure discussions is net investment rate base. This term may have originated with the Federal Water Power Act of 1920,[9] wherein net investment is defined at considerable length in terms of actual legitimate original cost, plus certain items, and minus certain others. As used in that Act it referred to information required to be submitted to the Federal Power Commission by persons or corporations licensed to develop power sites on navigable streams. For all practical purposes net investment rate base means the same thing as original cost rate base.

Working capital. - Besides properties, tangible and intangible, it is a usual regulatory practice to permit public utilities to include in their rate bases certain sums representing working capital. Working capital may be described as the funds necessary to enable the utility in question to meet its own current expenses while waiting for its

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[9] 41 Stat. 1063. In 1935 the Federal Water Power Act was made Part I of the Federal Power Act, and this definition is now to be found in Section 3 of the latter; 16 U.S.Code 796.

customers to pay their bills. It may exist in the form of cash balances, materials and supplies, prepaid expenses and other current items.

Working capital has not received any great emphasis of late, as a rate base item, for the reason that many regulatory agencies have taken the position that the cash which a public utility company accumulates in anticipation of Federal income tax payments provides it with ample working capital.

This concept may be in for some revision, now, as result of new methods of accounting for depreciation for tax purposes permitted by the 1954 Internal Revenue Code. It may also be affected by the partial swing-over to a pay-as-you-go payment schedule of income tax payments for large corporations, which is now required.

CHAPTER III

RETURN AND THE RATE-MAKING PROCESS

Fixing the return, and the rate of return, of a public utility company is one of the steps of the rate-making process. It is the step in which consideration is given to the fact that public utility companies are private enterprises, privately financed.

In order that the return, or rate of return, may be viewed in its proper perspective, an understanding of the rate-making process is important. As already stated, one of the principal objectives of regulation is to insure that the rates charged by public utility companies are just, reasonable and non-discriminatory. At the same time the aggregate of revenues, under the rates fixed, must be such as to enable the company being regulated to defray all its legitimate operating costs, pay all its taxes, including Federal income taxes, and earn a fair return on the capital employed in providing the service.

As a matter of law,commissions and other regulatory agencies engaged in rate-making must take into account all relevant factors. Otherwise their decisions and rulings may be challenged in court. Because of this necessity, and for other reasons, the testimony and evidence which may be submitted to a public service commission during the course of an important rate proceeding is often voluminous, and sometimes irrelevant. Much time must be spent in the examination and cross examination of witnesses. Additional time is required to digest and weigh the testimony and evidence. The process is time consuming;

the opportunities for differences of opinion are many.

Steps in rate-making. - In general outline the steps of the rate-making process are (1) the selection of some recent annual period as a test period for accounting purposes, (2) the establishment of the cost of service during that period, (3) the making of such adjustments to the cost of service for the test period as seem necessary in the light of known changes, or changes which can reasonably be anticipated, so as to arrive at a cost of service for a subsequent annual period, (4) estimating the amount of service to be sold during such a forthcoming annual period, and (5) designing rates which will produce revenues equal to the estimated cost of service for such period.

The rate of return. - One phase of the process of estimating the cost of service is to determine the return on capital to be requested or allowed. This is usually done by first establishing a rate base and then applying a rate of return to it. In this aspect of the process, as has been previously noted, investors in the enterprise, through management, may be expected to claim that a high rate is necessary. Meanwhile the rate-payers, as represented by people's counsels, or the staff of the public service commission, may be expected to take the opposite stand. Our chief present purpose is to examine a developing tendency to rationalize the rate of return in terms of capital costs in a certain segment of the public service industry, namely the natural gas pipe line business.

Rate fixing. - If the public utility company the rates of which are under study served but one class of customers as, for example, house-

holders, and furnished only one form of service as, for example, kitchen service, then the fixing of rates after the cost of service had been estimated would be a fairly simple affair.

Most public utility companies, however, must sell their services, whatever they are, to numerous classes of customers some of whom, for want of better description, might be classed as wholesale customers, while others might be taking the service at retail, so to speak. And since it is a general business theorem, to which the public utility business takes no exception, that those who buy wholesale are entitled to a better price than those who buy retail, the necessity for wholesale and retail rates appears.

Again there is the off-peak customer. Everyone is familiar with the lower rates charged by the telephone companies for long-distance service. Many are familiar with the electric companies' lower rates for hot water heating during the "wee sma' hours o' morning." These rates are intended to be promotional; the object of them is to promote utilization of these facilities during times when they might otherwise be idle.

Natural gas rates. - So in the natural gas business rate-making must take similar factors into consideration. It is, on the whole, a complicated process. Load factors are important; winter peak demands and summer "valleys" must be considered, and rates adjusted so as to even them out if possible. It is a truism, but worth stating, that rates fixed, and the amount of gas expected to be sold, are closely related.

Again, in the natural gas business, there is the matter of competition. Natural gas competes with at least two other fuels, coal and oil, for general heating purposes. In the domestic sales field it also competes with electricity for kitchen use. Competition in the industrial sales field is sometimes extremely sharp; some firms even go so far as to equip themselves to use coal, oil or gas, whichever promises to be cheapest. To such concerns a decision as to which fuel to burn might mean the difference between a profit or a loss.

Rate form. - Then, too, in the natural gas business, there is the question of rate form. Rates charged are almost always composed of two elements, one the charge for the gas delivered, called the commodity charge, and the other the charge for readiness to deliver gas, called the demand charge.

Justification for the demand charge is to be found in the fact that natural gas companies must maintain facilities with which to meet the peak demand on their systems on a year-round basis, even though those facilities may not be fully used oftener than once or twice a year.

Many rate schedules, or gas tariffs, also contain provisions as to minimum bills, the basis for determining the demand charge, adjustments for failure to deliver gas, penalties for "over take," interruptions to service, and numerous other features. The design of rates is a science in itself. A complete understanding of the process is not essential to the purposes for which this study has been undertaken.

Allocation. - Another ticklish and sometimes controversial aspect of rate-making is encountered whenever only a part of the business of a public utility company is subject to the regulatory jurisdiction of a particular commission confronted with the issue of rates. This sort of situation occurs quite frequently in the telephone business, where a single Bell system company may operate in several states.[1]

In the natural gas business the line of jurisdictional demarcation usually lies between the interstate sale-for-resale business, which is in the Federal jurisdiction, and the intrastate and direct industrial sales business which may or may not be subject to local rule.

Thus, for example, Northern Natural Gas Company, an established industry unit, is subject to Federal Power Commission regulation with respect to that part of its business which consists of transmitting gas across state lines and selling it to other gas distribution companies, such as Minneapolis Gas Light Company. However, it is subject only to state or local regulation with respect to the retail business done by its Peoples Natural Gas division. Such direct sales of gas as it may make to industrial consumers is not subject to regulation by the Federal agency, and may or may not be subject to regulation by local authority; the situation is not clear.

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[1]For example, Mountain States Telephone & Telegraph Company, a Bell system company serving the states immediately to the eastward of California, Oregon and Washington, is subject to the jurisdiction of seven state commissions and a Federal commission.

When such circumstances prevail it is usually necessary to separate the costs and expenses relating to the jurisdictional business from the costs and expenses relating to the non-jurisdictional business in preparing cost of service estimates. A similar separation of capital assets, on an original cost less depreciation basis, must also be made to determine the jurisdictional rate base. This process is termed allocation. It frequently involves matters of judgment, and there are times when the only way in which it can be accomplished is by arbitrary decision. Herein lie additional opportunities for differences of opinion, as well as confusion, in the rate-making process.

A process of estimate. - As suggested by the foregoing discussion the rate-making process is often a matter of judgment and estimate. Nevertheless, if it is honestly undertaken, the rates fixed should come close to meeting the revenue needs of the utility concerned during the immediate future.

Whether or not the rates fixed pursuant to such practices are just and reasonable, and will produce the desired results, usually cannot be determined until after they have been in effect for some time. This is particularly true in the natural gas business, where temperature and weather conditions have a pronounced effect upon demand. If judgments err, which is not impossible, the rates can always be changed. Rate-making is a continuous process.

As a practical matter it usually takes such a long time for a busy commission to process a rate increase application that a rate sched-

ule, once set, will usually receive a fair try out before either the company concerned or the commission will be ready to try to alter it. There is the added fact that too frequent demands for rate increases provoke unfavorable consumer and public relations.

Over or under. - If the revenues to be derived from new rates have been underestimated, or the public utility company concerned has an unexpectedly good year, then the return will be greater than was contemplated when the cost of service study was undertaken. If the results have been overestimated, then there will be an opposite result. Thus it would appear that the return has another usefulness beside that of providing for the investors in the enterprise, to the extent that it includes, or might include, a margin of safety or allowance for contingencies of one sort or another which could not have been forseen.

Public utility company managements frequently complain that this aspect of the rate of return question does not receive the attention which it merits from the regulatory authorities. Regulatory authorities counter that it is as broad as it is long, and that while companies are quick to complain if they have been "short changed" in the matter of the basic return percentage, they are also prone to overlook the windfalls which they sometimes receive when things work in their favor. Insofar as the margin for error is concerned both seem to overlook the fact that the making of "rainy day" provisions is one of the functions customarily exercised by the directors of enterprises in setting dividend policies.

Importance of the Return in Rate-Making

As noted above it is the usual practice to state the return in terms of a percentage of the rate base. In commenting upon this practice Dr. E. W. Clemens of the University of Maryland observes that despite the coordinate importance of these two factors, return and rate base, commissions struggling with the problem will commonly dismiss the rate of return with a few lines, after having devoted endless pages in an opinion to haggling over small items in the rate base. He goes on to say:

> There is no occasion to lament an absence of legalistic brawling. It is true that commissions have been far from painstaking in determining fair rates of return. The determining forces which establish the fairness of any rate of return are abstract, complex, and difficult to analyze; and it is understandable at least that returns have been set in round percentages, such as the common 6 per cent. It is, however, more difficult to justify the lack of study that has been given to the problem.[2] (Emphasis supplied.)

To the foregoing comment might be added the observation that the rate base, also the cost of service, often receive greater emphasis merely because they are better understood. Accountancy presents the appearance, at least, of being a precise science. Its very precision often obscures the fact that important matters of judgment are often involved as, for example, in the selection of depreciation rates or, as in rate-making, in the matter of the allocation of costs, discussed above.

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[2] E. W. Clemens, Economics and Public Utilities (New York: Appleton-Century-Crofts, Inc., 1950), p. 217.

By contrast, only a few of the real factors which determine the fair rate of return can be expressed in finite quantities and so lend themselves to accounting analysis or statistical manipulation. Perhaps some day the factors bearing upon the matter of fair rate of return for natural gas pipe line companies may be segregated, identified, labelled and expressed in such a way that they can be fed into the fabulous Univac machine whence, upon the pressing of a button, the precise rate of return which is applicable to a particular situation may be produced. Pending this development it is the author's hope that the present examination and discussion will serve to illuminate the subject and point out the manifest limitations of the methods presently employed.

CHAPTER IV

ECONOMIC STANDARDS OF THE FAIR RETURN

For reasons hereinbefore outlined public service commissions seeking to fix a fair rate of return for companies in their respective jurisdictions must, or should consider the consequences of their actions from numerous points of view. One of these is the economic point of view.

The economic viewpoint is important because it is directly related to the ability of the public utility company under scrutiny to raise the capital necessary for the proper discharge of its duties. Access to the capital markets is essential if the public utility company is to serve its community efficiently and well. In order to appreciate this point it is only necessary to consider what life in the United States would be like if the electric companies had been unable to raise the capital which they have required during the past half century.

This fact also needs to be considered; the owners of capital cannot be coerced into investing in an enterprise. Capital is independent. It is also shy, timid, wary, sensitive and easily alarmed. It is not merely sufficient to offer the owners of capital the going interest rate. Capital must be <u>attracted</u> to an enterprise, and one of the things which it appreciates most is security.

Another thing which needs to be considered in setting the rate of return, at least from the economic viewpoint, is that the owners

of capital have a fairly wide range of choice as to media; they are by no means limited in their investing to the natural gas business, or even to the public utility field. Many other fields of investment often seem greener. What, then, is needed to induce investors to display continuing confidence in this field ? What are the economic standards of fair return ?

Views of Dr. Nelson Lee Smith

The longest and most comprehensive survey of the economic aspects of the fair rate of return presently available is that prepared about 25 years ago by Dr. Nelson Lee Smith, then an Assistant Professor of Economics at Dartmouth College, and more recently a member of the Federal Power Commission. The title of this work is The Fair Rate of Return in Public Utility Regulation.[1] The following is summarized from Dr. Smith's conclusions:

> From both the legal and economic point of view, the basis of public control is the inadequacy of competition to protect the public interest in certain extremely important fields of economic activity. Accordingly it is legitimate to identify the objectives of authoritative regulation with the ideals of free competition, although not with the actual competitive process in all of its admittedly wasteful aspects.
> . . . . . .
> Thus we are led to the view that fair rates for a regulated public utility must be defined in economic terms as the opportunity cost of the service. By far the larger portion of such cost is automatically determined from the outside, taking the form of payments for labor and materials which enter directly into the production of the service. An important element in

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[1] Published at New York and Boston by Houghton Mifflin & Co., 1932.

> the cost, however, is the fair return-- the proper net operating income, which determines the apportionment of the productive resources [of the economy] between this enterprise and other possible uses and which thus and through its relation to the rates charged for service, influences the entire competitive price structure.
>
> The principles which should govern the selection of the fair rate of return are . . . derived from our concept of the role of opportunity cost. From the standpoint of production, at least, the volume of resources apportioned to public utility enterprises should be such as to produce equality between their rates of return and the earnings on competitive investments. That such rates of return will fluctuate with changes in the demand for commodities and in the supply of productive agencies is to be expected and, indeed, desired so long as such causes of maladjusted production continue. It is through these variations that conditions of over-and under-investment are disclosed and corrected; under ideal competition inequalities of return disappear only as the appropriate reappointment of productive power takes place. It is in this connection that present processes of regulation appear to the least advantage.[2]

The reference to opportunity cost will be noted. Earlier Dr. Smith had identified opportunity cost with present value and reproduction cost. But he concedes the possibility that some variety of original cost or prudent investment might prevail. In that event, said he

> economic considerations would require the admission of present values through the rate of return.[3]

Continuing, Dr. Smith observes:

> It is universally conceded that the fair return includes at least pure interest on the capital invested. Occasionally allowances are added for profit and as a reward for efficient management. Until it is proved that profit does not tend to

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[2] Ibid., pp. 212-215.

[3] Ibid., p. 32.

> disappear under competition, but constitutes a true cost of production, the propriety of separate allowances for profit is doubtful. As long as operating costs are subject to effective supervision, a standard of operating efficiency may be applied to which all utilities may be expected to conform. Further than this, the failure to guarantee earnings may be offset against the utilities' right to retain at least a portion of any income exceeding the fair return. These factors to-gether probably afford adequate penalization for inefficiency and a sufficient stimulus to economy in operation. If, however, any separate allowances are made to promote operating efficiency, their effectiveness is certain to depend upon the degree to which their terms are definite and specific, and their appeal direct.[4]

Views of Dr. Eli Winston Clemens

Dr. Eli Winston Clemens, another public utility economist of stature, is briefer. In his opinion the fair return should include payment for three factors, as follows:

1. Pure interest
2. Risk
3. Costs arising from the transfer of capital

To bring the rate of return into closer alignment with administrative reality Dr. Clemens recommends that the following additional elements be considered, though not necessarily included:

4. A reward to management
5. Taxes
6. A contribution to surplus[5]

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[4] Ibid., pp. 215-216.

[5] E.W.Clemens, Economics and Public Utilities (New York: Appleton-Century-Crofts, Inc., 1950) p. 217 et seq.

Dr. Clemens's views on pure interest and risk seem to correspond closely with those of Dr. Smith. The element of cost arising from the transfer of capital seems principally to be a reminder that capital obligations are not always what they seem to be in terms of the principal amount or par value of the securities issued.

Reward to management. - The principal rewards of superior management, observes Dr. Clemens, is very often a reduction in the rate of return, rather than an increase therein, or other benefice. In justice to the utility, and to the long-run interest of the consuming public, he recommends that part of any profit resulting from better than average management be permitted to accrue to the utility. But he also observes that the stockholders who, in modern corporations, would be the chief beneficiaries of such accruals, have little or nothing to do with management.

Dr. Smith also considered the subject of rewards to management. He said, ". . . there appears to be no compelling reason why the utilities' share of the savings [due to efficient management] should go to the owners of the property in the form of added returns." His recommendation was that the management and others be rewarded through some form of employee bonus, based on savings in operations. Such provisions, he says, would be predictable and would properly constitute an element of operating expense, and could probably be estimated with a reasonable degree of certainty for inclusion in the cost of service.[6]

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[6]Smith, op. cit., p. 73.

At first glance it would seem as if the principal result of efficiently operating a regulated public utility company, under a cost of service method of rate-making, would be to establish the basis for rate reductions. Contrarily it would likewise seem as if the principal result of inefficient operation would be to establish the basis for rate increases or to delay rate reductions.

To counter this anomalous concept quite a number of regulatory bodies have stated it to be their belief that efficiently operated companies should be entitled to higher rates of return than inefficiently operated companies, or be allowed to retain a part of the savings which might otherwise have to passed on to their consumers. Still others have observed that inefficient companies might be penalized by being obliged to operate under a lower rate of return than that to which they might otherwise seem entitled.[7]

As Dr. Clemens has observed numerous difficulties stand in the way of the practical application of such principles. One such difficulty, namely that the chief beneficiaries of the "reward" treatment would not be the managers who were responsible for the efficiency, but the stockholders, has already been mentioned. In the same vein the principal suffers from the"penalty" treatment might be the consumers, rather than management.

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[7]See Ellsworth Nichols, Ruling Principles of Utility Regulation - Rate of Return (Washington, Public Utility Reports, Inc., 1955), 20, pp. 382-395.

The author, in his researches, has encountered no instances in which natural gas pipe line companies have been accorded anything in the way of rewards or penalties for efficient management, or lack of it, via the rate of return route. It is concluded that anything of this nature which has been all tted has been of an intangible and subjective nature, and has entered only subtly into rate of return determination.

Allowance for taxes. - It would appear that the taxes which Dr. Clemens had in mind as a possible return element were those taxes, other than ad valorem taxes, and income taxes, the amount of which could not be determined until the amount of the net income was known. The excess profits tax, in effect during World War II was a tax of this type.

The author knows of no such tax presently in force which would justify making special provisions therefor in the rate of return.

Contributions to surplus. - In the matter of contributions to surplus Dr. Clemens says:

> The inclusion within the allowable return of a certain amount, in excess of dividend requirements, to be credited to surplus is of doubtful propriety. . . If a surplus is to be built up, it should be done at the expense of dividends.[8]

This seems to cover the situation where the return to the common equity is set forth in terms of a specific common dividend rate.

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[8]Clemens, op. cit., p. 224.

Investors generally assume that a certain portion of income will be retained for reinvestment in the business; consequently if this is not implicit in the return permitted investors may be expected to discount this factor when they buy the stock. To counteract this effect it may be necessary to make provision for the accumulation of a surplus in the return permitted.

The author knows of no situation in which this necessity arises, at least so far as natural gas pipe line companies are concerned.

Views of Other Authorities

Another authority consulted frequently during the course of this study was Professor Irston R. Barnes. Professor Barnes's views on the economic content of the fair rate of return are summarized in the following statement:

> What is the composition of the rate of return from the point of view of the economist ? As the economist sees it, the rate of return consists of payment for three kinds of service: payments for the supply of capital funds, for the assumption of risks, and for the rendition of personal services.[9]

According to Professor Barnes's further explanation interest, as he uses the term, means pure interest, so that interest in this sense, plus risk, are combined in the contractual interest, or dividend rates, which the utility promises to pay to the holders of cer-

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[9]Irston R. Barnes, The Economics of Public Utility Regulation (New York: F. S. Crofts & Co., 1942), pp. 517-8.

tain of its securities in order to induce investment in the enterprise. Payments for services are those associated with the raising of capital, not personal services of management, as might be supposed. It is to be noted that Professor Barnes makes no mention of rewards to management, or other forms of bonus.

From a practical standpoint the statements of Dr. Martin G. Glaeser concerning the economic content of the rate of return seem particularly pertinent. He said:

> The rate of return should be high enough but not higher than is necessary to attract capital and the necessary managerial ability into the industry and hold it there. In applying this standard regulation pulls the teeth of monopoly. By making the reasonableness of the return depend upon the willingness of investors, owners and hired managers to continue their work in production, no unreasonable coercion is practiced on consumers.[10] (Emphasis supplied)

Public utility companies appear to have been able to exercise a relatively free hand in the selection and compensation of their management and technical personnel. Instances in which they have been criticized for over-generosity are rare. Bonuses are few but security is great. Turnover in top jobs is slow, but progress towards top positions in the industry is steady. It is a career type of business which attracts and retains many competent executives.

Summary. - One thing standards out in the dissertations of the learned gentlemen quoted concerning the economic content of

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[10]Martin G. Glaeser, Outline of Public Utility Economics (New York: The Macmillan Company, 1931), p. 414.

the rate of return. This is that it should include a sum sufficient to reimburse the owners of capital committed to the business for the use of their funds and the risks assumed. Beyond this several concede the desirability of permitting the return to include an extra allowance or bonus for efficient operation and management, though most of them are vague as to how to justify such an award, or how much it should be and to whom it should be distributed.

The baffling aspect of the rate of return question develops when an attempt is made to translate these economic principles into specific percentages which will, in turn, lead through the rate-making process to just and reasonable rates for the consumer, and which will, at the same time, attract investors as well. It may be that cost of capital, as an approach to the rate of return issue, will serve effectively to bridge this gulf.

CHAPTER V

THE LEGAL FOUNDATIONS OF PUBLIC UTILITY REGULATION

In Chapter Three of his volume Economics and Public Utilities[1] Dr. Clemens, previously quoted, says that the authority to regulate private enterprise in the public interest derives from two sources. One of these is the police power of the state, a fundamental principle of law upon which the very existence of government, the security of the social order, and the life and health of the citizenry depends. However, since the police power is not mentioned in the United States Constitution, it is generally agreed that the exercise of this power is "reserved to the States, respectively, or to the people" according to Article X of that document.[2]

The other source of authority to regulate private enterprises engaged in rendering a public service is Article I, Section 8, Clause 3 of the Federal Constitution which specifically endows the central government with authority to "regulate commerce with foreign nations

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[1] pp. 43-48.

[2] This is not to say that the constitutions of the several states do not contain provisions authorizing their governments to adopt laws for the regulation of public utilities for, as a matter of fact, most of them do. The question here is which government, Federal, state or municipal, possesses the fundamental authority to enact regulatory laws.

and among the several states, and with the Indian tribes."

This is the so-called "Interstate commerce clause" of the Federal constitution. Under it Congress has enacted numerous laws regulating companies rendering various forms of public service on an interstate basis; these have included railroad, telephone and telegraph companies. Of particular interest here is the Natural Gas Act of 1938,[3] regulating companies engaged in the interstate transmission of natural gas. Of incidental interest is the Federal Power Act,[4] regulating companies engaged in the interstate transmission of electrical energy.

Other constitutional provisions. - The regulatory authority of all governments, state and Federal, is deemed to be limited by certain other provisions of the Federal constitution, as follows:

1. The Fifth Amendment, sometimes known as the "due process" clause;

2. The Fourteenth Amendment, sometimes known as the "equal protection of rights" clause, but which is also a "due process" clause;

3. Article I, Section 10, which provides that "no state shall . . . pass any law impairing the obligation of contracts;" and

4. Article IV, Section 2, Clause 1, called the privileges and immunities" clause, which provides that "The citizens of each State shall be entitled to all privileges and immunities of citizens of the several States." As interpreted this does not apply to corporations.

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[3] 15 U.S.Code 717-717w.

[4] 16 U.S.Code 791a-825r.

Development of public utility regulation. - Numerous authorities on public utility economics have recounted the process whereby public service industries of one sort or another have been laid by the heels and made subject to the authority of law.[5] Present purposes will be served by a brief outline of that process.

Most observers concede that the beginning of regulation, at least so far as the United States is concerned, dates from the United States Supreme Court decision of 1877 in the matter of Munn v. Illinois,[6] one of the Granger cases. This case had arisen as result of the efforts of the Illinois legislature to fix the maximum price which might be charged by elevator operators for the storage of grain. The principals in the case, a firm named Munn & Scot, refused to abide by the statute. They were taken to court and fined.

The case was taken to the Federal courts on the grounds that the operation of a grain elevator was a private business, and that any attempt to regulate the prices which it charged was a violation of the "due process" clauses of the Federal constitution, and therefor illegal. Eventually the matter reached the Supreme Court, which ruled that the legislature did have the authority, under the police powers, to regulate not only the use of facilities such as grain ele-

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[5]The account presented by Professor Irston R. Barnes in his volume entitled The Economics of Public Utility Regulation (New York: F.S.Crofts & Co., 1942), is very complete.

[6]94 U.S. 113-154 (1877).

vators when they were devoted to a service in which the public had an interest. The Court said:

> When . . . one devotes his property to a use in which the public has an interest he, in effect, grants to the public an interest in that use, and must submit to be controlled by the public for the common good, to the extent of the interest he has thus created.

State Regulation

Since this early ruling, nearly a century ago, the regulation of public service enterprises in the United States has passed through several stages. Insofar as the states are concerned the task was undertaken, initially, by the legislatures which sought to deal by statute with such matters as rates, discrimination, drawbacks, standards of service and other practices.

Investigatory commissions. - Regulation through legislation eventually proved too cumbersome to deal with the increasing number of problems created by an expanding economy so many states appointed commissions to look into these various problems and report thereon. The general purpose behind this procedure seems to have been to call public and legislative attention to situations which needed correction. In some states, notably Massachusetts, good use was made of this investigatory procedure; in others it failed, largely because the public was apathetic, and the offending companies indifferent to the investigatory commission exposures.

Railroad commissions. - After 1870 railroad commissions, so called, began to come into existence. At first these commissions had little more authority than their investigatory predecessors had had. As time passed, however, their hands were strengthened in various ways, and by the end of the nineteenth century most of them were in a position to deal effectively with companies under their jurisdictions. During the period from 1865 down to the turn of the century the railroads were the country's most rapidly growing and intransigent "public utilities."

Present-day regulatory commissions. - The present-day type of state regulatory commission first came into being about 1907, during which year both New York and Wisconsin revised their public service laws and endowed their commissions with full authority to deal with all phases of the public service problem. Most of the other states ultimately followed suit, and to-day most of the commissions are well equipped, insofar as laws are concerned, to deal effectively with the regulatory problem.

While warehouses, grain elevators and stockyards are still of interest to the commissions in some jurisdictions, it is the electric companies, gas companies and telephone companies which now come in for the greatest amount of attention from the state regulatory bodies.[7]

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[7]For a list of the public service commissions in the states and territories, and an outline of their authority, see State Commission Jurisdiction and Regulation of Electric and Gas Utilities 1954, published by the Federal Power Commission, Washington 25, D. C.

The Federal Phase

What might be called the Federal phase of public service company regulation dates from 1887 in which year the Interstate Commerce Commission was created.

For a number of years this Commission's efforts to exert its authority over interstate carriers - railroads particularly - were hampered or thwarted by the passive resistance of the carriers themselves. In 1906 its authority was considerably strengthened by the passage of the Hepburn Act, and the Commission has since had little difficulty in enforcing its rulings. Present thinking is that the railroads are, if anything, over regulated.

Federal regulatory authority under the interstate commerce clause of the Constitution was greatly extended and consolidated during the New Deal era. The first new commission to be created during that period was the Federal Communications Commission. There had been some form of Federal regulation over interstate electrical communications since 1866. Telephone, telegraph and "wireless" communications had been regulated in a somewhat desultory fashion by the Interstate Commerce Commission since 1910. In 1911 the Department of Commerce undertook to regulate certain phases of the business of radio communications and the Federal Radio Commission was formed. During the early 1930s it became apparent that all this regulation was confused and ineffective, and in 1934 the Federal Communications Commission was formed. This Commission's present jurisdiction extends to

telephone and telegraph communications, international radio communications, and radio and television broadcasting.

Federal Power Commission. - In 1935 Congress passed the Federal Power Act,[8] amending the Federal Water Power Act of 1920, and giving the Federal Power Commission regulatory authority over companies engaged in the interstate transmission and sale of electrical energy. This Commission had been in existence since 1920, and was originally composed of the Secretaries of War, Interior and Agriculture. Its original mission had been conservation; its principal responsibility had been to license water power projects.

In 1930 the Commission had been reorganized. Provision had been made for five full time commissioners and a staff. The Act of 1935 endowed it with authority to regulate many aspects of the business of companies doing an interstate business in electrical energy, including rates and service, the keeping of accounts, issuance of securities, mergers and other matters. In 1938 Congress adopted the Natural Gas Act[9] giving this same commission authority to regulate companies engaged in the interstate transmission and sale for resale of natural gas.

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[8] 49 Stat. 838 (1935). This Act was known as the Public Utility Act of 1935. Part I of the Act became known as the Public Utility Holding Company Act, and is administered by the Securities and Exchange Commission. Part II became known as the Federal Power Act and is administered by the Federal Power Commission.

[9] 52 Stat. 821-823 (1938).

Public Utility Holding companies. - The same Act of Congress which gave the Federal Power Commission the authority to regulate companies doing an interstate business in electrical energy also gave the Securities and Exchange Commission, another Federal agency, authority to regulate as well as dissolve public utility holding companies. Passage of this portion of the Act was stoutly resisted by the electric companies and as firmly demanded by the New Deal proponents of the Act.

The Securities and Exchange Commission had been created in 1934 with authority to require the registration of securities offered for sale to the public. Its mandate under the Public Utility Act of 1935 called upon it to achieve the simplification of public utility holding company systems and, in many instances, to eliminate the holding companies themselves. Few can deny that it has done its work effectively and well.

Later developments in the field of Federal regulation include the creation in 1938 of the Civil Aeronautics Authority, to regulate airborne interstate commerce in much the same way that the Interstate Commerce Commission regulates surface transportation.

Federal regulation in these various fields of interstate commerce has been, on the whole, quite effective, especially during recent years. The authority of the Federal government to undertake this task is quite clear, and few have had the temerity to question it. The rulings of Federal commissions are not, of course, immune from

court review, but the court of first review is, in most instances, the Court of Appeals. Since this is the court just below the United States Supreme Court the road to ultimate adjudication of disputed issues is, procedurally speaking, a relatively short one.

Generally speaking the regulatory agencies of the Federal government have done their work thoroughly and well. Although their opinions and rulings have been taken to court on numerous occasions that have been with fair consistency, upheld.

CHAPTER VI

JUDICIAL CONCEPTS OF A FAIR RETURN

Most of the cases involving public utility company rates which have reached the higher Federal courts have been taken there under the so-called "due process" amendments to the Federal constitution described in the preceding chapter. The usual argument with which such cases are presented to a court is that the rates fixed by a commission or community[1] are so low that the petitioning company is being deprived of its property by reason of its obligation to continue to render service, regardless of the circumstances. It has never been necessary for a public utility company to prove that it has been losing money by reason of these circumstances; it has merely been necessary for it to claim that it was not earning a fair return.

It should be noted that neither the Fifth nor the Fourteenth amendments to the Federal constitution, which are the "due process" amendments, contains any particular standard as to what constitutes a fair return. The Fifth amendment merely states that the compensation to be paid an owner for the use of his property shall be just and reasonable. The Fourteenth amendment says nothing at all regarding compensation. In the final analysis then, and quite properly too, inter-

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[1] In some states public utility rates are regulated by the communities served, rather than by a state body. See State Commission Jurisdiction and Regulation of Electric and Gas Utilities 1954; Federal Power Commission, Washington, D. C., Table I, pp. 18-21.

pretation of these constitutional principles becomes, as it often does, a matter for the courts of law. However it is usually the responsibility of the public service commission, or other regulatory body, having the first look at the matter to attempt to find an equitable solution if, for no other reason than to avoid the necessity for extended litigation. "Justice delayed is justice denied."

Judicial Doctrine

Judicial doctrine in the matter of just and reasonable rates and fair return has been developed over a period of years in a number of United States Supreme Court decisions the first of which emerged in 1886. It concerned the matter of Stone v. Farmers Loan & Trust Co.[2] The question with which the Court was then confronted was the right of a state, in this instance Mississippi, to limit the rates charged by the Mobile and Ohio Railroad. The Court's decision was that the state did have that right, although the Court also observed that it was a right which might be carried too far. "The power to regulate," said the Court, "is not a power to destroy, and limitation is not the equivalent of confiscation."

The next step along the line towards the development of judicial doctrine, as Clemens recounts it,[3] was a decision rendered by

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[2]116 U.S. 307 (1886).

[3]Clemens, E.W., Economics and Public Utilities (New York: Appleton-Century-Crofts, Inc.,1950) pp. 44-54.

the Court in 1890, in the matter of Chicago, Milwaukee & St. Paul Railway v. Minnesota.[4] In this instance the matter involved was a question of jurisdiction, rather than rates; the Court observed that the reasonableness of rates was eminently a matter for judicial investigation.

Smyth v. Ames

In 1898 there emerged from the Court its classic and long-to-be-remembered decision in the matter of Smyth v. Ames.[5] Most authorities regard this as one of the outstanding decisions in the history of public utility regulation in the United States, and place it on a par with Munn v. Illinois, discussed in Chapter V hereof. Though it has since been superseded, as will presently be shown, its ghost still haunts the issue of fair return, and for these reasons it seems worthwhile to discuss it briefly here.

History. - The case grew out of a law passed in Nebraska in 1893, fixing maximum rates for freight shipments to be charged by railroads operating in that state. The law was challenged by the Union Pacific and other railroads on the grounds that the rates fixed were too low, and would so reduce the roads' earnings, and the value of their property, as to amount to nothing less than confiscation.

Counsel for the company claimed that the railway was entitled to sufficient revenues to meet operating expenses, interest and divi-

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[4] 134 U.S. 418 (1890).

[5] 169 U.S. 466 (1898).

dends, and that any amount less than that would deprive it of its property.

Counsel for the State of Nebraska[6] pointed out that the capital costs of the road, upon which these claims were based, were overstated. To demonstrate this he made much of the fact that the road had been built during the period immediately following the Civil War, at a cost of $103,000 per mile whereas it could have been reproduced at a later period for about $20,000 to $30,000 per mile.

The Court upheld the State. It said:

> ". . . the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used for the convenience of the public."[7] [Emphasis supplied]

Fair Value

But what was fair value ? To dispose of this question the Court went on to say that in order to ascertain that value

(1) the original cost of construction,

(2) the amount expended on permanent improvements,

(3) the amount and market value of the bonds and stocks,

(4) the present as compared with the original cost of construction,

(5) the probable earning power of the property under the

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[6]Williams Jenning Bryan.

[7]Op. cit., p. 546.

particular rates prescribed by statute, and

(6) the sum required to meet operating expenses,

were all matters for consideration, to be given such weight as may be just and right in each case. The Court continued:

> We do not say there may not be other matters to be regarded in estimating the value of the property. For what the company is entitled to is a fair return upon the value of that which it employs for the public convenience. On the other hand what the public is entitled to demand is that no more be extracted from it for the use of a public highway than the services rendered by it are reasonably worth.[8] (Emphasis supplied)

The rule. - Thus was stated the rule of Smyth v. Ames which was to be the controlling doctrine on the subject of just and reasonable rates for the next fifty years. There was no mention in the decision of depreciation, later to be found additionally important in Knoxville v. Knoxville Water Co.[9] Nor was there any suggestion from the Court as to how the factors which it had cited were to be combined in order to arrive at the fair value which, it said, was controlling.

Reproduction costs and high rates. - Generally speaking the Smyth v. Ames concept of "fair and reasonable return" found favor with the public utility industry. It was generally understood that fair value meant reproduction cost, for had it not been one of the State's principal arguments that the properties of the railroad

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[8] Ibid., p. 547.

[9] 212 U.S. 1 (1909).

involved could have been reproduced for a lot less than it had cost to build them ?

Fortuitously the principle was enunciated at a time when the electric light and power and telephone businesses stood at the threshhold of their twentieth century march of progress. In succeeding years technical improvements in the equi ment of these industries were to follow, one upon the other, with such rapidity that much of it was to become obsolete long before it could wear out in service. Replacement equipment was invariably more costly than that which it replaced. During this period also construction costs were in a long-term upward trend, so that it was almost always possible to find that the reproduction value of a property was more than its original cost. Thus the reproduction cost-fair value standard could almost always be counted upon to bolster an argument for rate increases or against rate reductions.

In addition to all this the intentions of the Court, as expressed through the medium of Smyth v. Ames were to prove particularly susceptible of diverse interpretation. Almost any decision of a commission or court seemed open to challenge on one ground or another. Litigation seemed to go on without end.

New Views in the Making

A voice of protest against Smyth v. Ames, accompanied by a plea for the adoption of more objective considerations by which to judge rate of return in public utility rate-making was heard from certain justices of the Court in 1923, in the separate opinions of Justices Brandeis and Holmes in the Southwestern Bell Telephone Company opinion.[10]

This matter had been brought before the Court because of differences of opinion between the Company and the Missouri Public Service Commission. The matter at issue was the value to be placed upon the properties of the Company for rate-making purposes. The Company's valuation, based on reproduction cost, was high; the Commission's valuation, using a prudent investment approach, was low. The Company contended that the rates fixed by the Commission using the lower rate base were confiscatory.

A majority of the Court upheld the Company's point of view, but Justices Brandeis and Holmes, while concurring in the judgement, dissented from the opinion. Their dissent appears to have been the first comprehensive enunciation of the hypothesis that capital charges were factors which should receive consideration in fixing a rate of return.

Relevant portions of this famous dissent will be found on the following page.

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[10]262 U.S. 276 (1923).

> In essence there is no difference between the capital charge and operating expenses, depreciation and taxes. Each is a part of the current cost of supplying the service; and each should be met from current income. When the capital charges are for interest on the floating debt paid at the current rate, this is readily seen. But it is no less true of a legal obligation to pay interest on long-term bonds, entered into years before the rate hearing and to continue for years thereafter; and it is true also of the economic obligation to pay dividends on stock, preferred or common. The necessary cost, and hence the capital charge, of the money embarked recently in utilities, and of that which may be invested in the near future, may be more, as it may be less, than the prevailing rate of return required to induce capital to enter upon like enterprises at the time of a rate hearing ten years hence. To fix the return by the rate which happens to prevail at such future day, opens the door to great hardships. Where the financing has been proper, the cost to the utility of the capital required to construct, equip and operate its plant, should measure the return which the Constitution guarantees opportunity to earn.[11]

Bluefield. - The beginning of the end for Smyth v. Ames as the dominant legal doctrine in regulatory rate-making appears to have occurred later on in 1923 when the Supreme Court brought forth its decision in a matter affecting Bluefield Water Works & Improvement Company, a West Virginia utility.[12] Whereas this decision continued to uphold the principle that present value, otherwise reproduction cost, was the proper basis for valuing a property for rate-making purposes, the Court, perhaps unwittingly, included in its opinion other dicta which are regarded, even to this day, as being among the best legal pronouncements on the subject of rate of return. They appear, further, to be wholly

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[11] Ibid., p. 306.

[12] 262 U.S. 679 (1923).

supportive of the Brandeis and Holmes hypothesis, outlined on the preceding page, to the effect that cost of capital, or something akin to it, was something which should be taken into consideration in fixing a rate of return.

These principles were enunciated in the following language:

> What annual rate will constitute just compensation depends upon many circumstances and must be determined by the exercise of a fair and enlightened judgment, having regard for all relevant facts.
>
> * * *
>
> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments and in other business undertakings which are attended by corresponding risks and uncertainties, but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures.
>
> * * *
>
> The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise money necessary for the proper discharge of its public duties.
>
> * * *
>
> A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.[13]

Natural Gas Pipeline Company. - In Bluefield the stage had been set for more important pronouncements to follow. The next of these,

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[13]Ibid., p. 692.

appearing in 1942, was to establish the principle that it was the end result, not the method followed, which was the important thing in rate-making.

The public utility company involved in this instance was Natural Gas Pipeline Company of America, one of the pioneer long distance pipe line companies. It had been organized in 1930 by Peoples Gas Light and Coke Company, the gas utility serving Chicago, to bring gas to that city from the Panhandle of Texas. Though organized primarily to benefit its parent company, aforementioned, it also sold gas to most of the other distributing companies in the Chicago metropolitan area.

At issue in the proceedings as they reached the Court was the sufficiency of rates fixed by the Federal Power Commission. The decision said, in part, as follows:

> The Constitution does not bind rate-making bodies to the service of any single formula or combination of formulas.
>
> * * *
>
> Agencies to whom this legislative power has been delegated are free, within the ambit of their regulatory authority, to make the pragmatic adjustments which may be called for by particular circumstances.
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> * * *
>
> Once a fair hearing has been given, proper findings made, and other statutory requirements satisfied, the courts cannot intervene in the absence of a clear showing that the limits of due process have been overstepped.
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> * * *

> If the Commission's Order, as applied to the facts before it and viewed in its entirety, produces no arbitrary result, our inquiry is at end.[14]

Viewed in retrospect the situation at this juncture as regards judicial definition of fair return was that Smyth v. Ames was on the way out, but had by no means taken its final bow. New doctrines were in the making but had yet to be given full expression, or be accorded general acceptance. Litigation was in process, however, which was to lead to that end in a matter involving the Federal Power Commission as the regulatory agency over the interstate transmission and sale for resale of natural gas, and Hope Natural Gas Company, a subsidiary of Standard Oil Company (New Jersey) and one of the oldest and most prosperous companies in the natural gas business. The Supreme Court's decision in this historic matter will be examined in detail in the next chapter.

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[14]Federal Power Commission v. Natural Gas Pipeline Company, 315 U.S. 575, 586 (1942).

CHAPTER VII

THE HOPE DECISION

The latest word on fair return, insofar as judicial pronouncements are concerned, is presently represented by the decision rendered by the United States Supreme Court in 1944 in the matter of Federal Power Commission, et al. v. Hope Natural Gas Company.[1] This decision is of broad interest to all students of regulatory affairs for a number of reasons. One of the chief reasons is the seemingly complete abnegation by the Court of the mode, if not the principles of Smyth v. Ames.

Insofar as this study is concerned the decision is of interest, chiefly, because of the acceptance by the Court of original, legitimate cost as a proper basis for the valuation of properties for rate-making purposes. It is likewise of interest because of the treatment given the subject of rate of return, more particularly the affirmation by the Court of the principles it had set forth some twenty years earlier in its Bluefield decision.[2] It was of further interest because it related to a company subject to the jurisdiction of the Federal Power Commission under the Natural Gas Act of 1938.[3]

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[1] 320 U.S. 591 (1944).

[2] 262 U.S. 679 (1923).

[3] 15 U.S.Code 717-717w.

Hope Natural Gas Company

Hope Natural Gas Company, the object of the Court's attention in this matter, was a West Virginia corporation which had been organized in 1898. Thus in 1938, when the Natural Gas Act was adopted, it had already been in the natural gas business for forty years. As of about that time (1940) it owned some 3,000 natural gas wells, 5,000 miles of pipe line, numerous compressor stations and other equipment incident to the conduct of a business devoted to the producing, purchasing, processing and marketing natural gas. It was generally regarded as being a successful and prosperous venture.

Hope's operations were largely confined to the state of West Virginia, although it sent considerable gas outside the state to supply the requirements of certain distributors, who will presently be named. During 1940 it handled about seventy four billion cubic feet of natural gas, some of which it produced from its own wells, and some of which it purchased from other producers. About twenty billion cubic feet of this gas was sold or consumed within the state; the remainder was exported.

The principal purchasers of this exported gas were: East Ohio Gas Company, Peoples Natural Gas Company, Fayette County Gas Company and the Manufacturers Light and Heat Company. East Ohio Gas Company distributed the gas which it purchased in Akron, Cleveland, Youngstown and other Ohio communities. Peoples Natural Gas Company served a

part of Pittsburgh and other nearby Pennsylvania communities. River Gas Company served Marietta, Ohio. The Manufacturers Light and Heat Company served portions of Ohio, West Virginia and Pennsylvania in the vicinity of Wheeling.

Three of these companies, namely East Ohio Gas, Peoples Natural Gas and River Gas purchased about seventy five per cent of the gas which Hope exported from West Virginia. They were also affiliates of Hope; all of them, Hope included, were wholly-owned subsidiaries of Standard Oil Company (New Jersey). None of these companies had any securities outstanding in the hands of the public. Whenever any of them required capital it was furnished by Standard Oil. The latter was, and still is, the leading United States producer, refiner and marketer of petroleum products. It had taken a leading part in the development of the Appalachian oil and gas fields.[4]

Development of the case. - In 1938, shortly after the Natural Gas Act, aforesaid, was placed on the statute books, the Federal Power Commission was in receipt of a complaint filed under Section 13 thereof, by the cities of Akron and Cleveland, to the effect that the charges being collected by Hope for the gas which it was supplying to East Ohio Gas Company, were excessive. Thereupon the Commission instituted an inquiry to determine the reasonableness of those rates. In 1939 the Pennsylvania Public Service Commission entered

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[4]Standard Oil Company has since divested itself of control of these companies and they are now subsidiaries of Consolidated Natural Gas Company, a public utility holding company.

the case with similar complaints, relating to the rates charged Peoples Natural Gas Company which, as noted, was a distributor of gas in that state. Hearings were held during 1940 and 1941; in May, 1942 the Federal Power Commission rendered its opinion.[5]

Hope's claims. - In defense of the rates it had been charging Hope asserted that it was entitled to an eight per cent return on a rate base of $66,000,000, said to represent the value of the properties devoted to the interstate business. This rate base was derived from an estimate of what it would cost to reproduce the properties, $97,000,000 less observed depreciation and plus working capital. The $97,000,000 was almost double the "actual legitimate original cost" of the properties. Under the doctrine of Smyth v. Ames[5] Hope's claim was a perfectly legitimate one. Moreover, said Hope, it had been earning only three per cent on this base.

In support of its claim to have its reproduction cost rate base considered Hope introduced a trended original cost estimate of $105,000,000, said to indicate what the original cost of the properties would have been had 1938 prices for labor and materials prevailed throughout the construction period. This would have been since the turn of the century, for Hope had been organized in 1898.[6] The claim for an eight per cent return was also supported by an impres-

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[5] 169 U.S. 466 (1898).

[6] Trending is a device for giving an effect, in current estimates, to the declining purchasing power of the dollar.

sive array of economic and financial statistics.

The F. P. C. opinion. - From almost any point of view the Commission's opinion was a substantial set-back for Hope. In it the Commission refused to accept the company's contention for a return based on a reproduction cost rate base. The rate base was cut down to $33,712,526 which the Commission said represented

> The actual legitimate cost of the company's property used and useful in the production, transportation, and sale of natural gas in interstate commerce, plus unoperated acreage, working capital and future net capital additions.[7]

Concerning reproduction cost new the Commission said that such valuations were not founded on fact, and were hypothetical, conjectural and inherently fallacious, and such as to have no probative value whatsoever in the determination of an allowable rate base.[8]

Rate of return. - In the matter of rate of return the Commission held that Hope's request for eight per cent was unreasonable; a fair rate of return, it said, would be six and one half per cent. As result of the application of this percentage to the reduced rate base the Commission found Hope's rates to be excessive and ordered them to be reduced in the amount of $3,609,857 over-all.[9]

To show why it considered eight per cent excessive the Commission referred to numerous matters having more or less to do with the

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[7] 3 F.P.C. 204.

[8] Ibid., p. 203.

[9] Ibid., p. 205.

investment credit of Hope, that is to say its ability to raise capital. This was, of course, a somewhat academic discussion for Hope had no capital raising problems. As previously stated, whatever capital the company needed was furnished by Standard Oil Company. Nonetheless, the Commission observed that Hope was a seasoned enterprise which had, during the forty-two years of its history earned an average annual net profit of twelve per cent on its equity. The Commission also observed that over a period of years Hope had built up depletion and depreciation reserves far in excess of its requirements. The Commission concluded its discussion of these and other matters relating to its ability to raise capital by saying:

> The company's efficient management, established markets, financial record, affiliations, and its prospective business place it in a strong position to attract capital upon favorable terms when it is required.[10]

Review. - Considering the circumstances it was almost inevitable that the Commission's opinion should have been taken to court for review, and during February, 1943, the Circuit Court of Appeals for the Fourth Circuit set aside the order of the Commission implementing its decision on the grounds that the rate base should have reflected present fair value, as well as trended original cost.[11] The review court's decision was strictly in accordance with the doctrine of Smyth v. Ames and diametrically opposed to the stand taken

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[10] Ibid., p. 186.

[11] 134 F2d, 287.

by the Commission. From there the case was taken on certiorari to the United States Supreme Court.

The Supreme Court Opinion

The decision of the United States Supreme Court, reversing the Circuit Court, and upholding the Federal Power Commission, was delivered January 3, 1944. The forepart of that section of the Opinion dealing with rate of return consisted principally of reiteration of the Court's decision in the Natural Gas Pipeline Company of America case, delivered two years earlier.[12] It ran as follows:

> We held in Federal Power Commission v. Natural Gas Pipeline Co. . . .that the Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its rate-making function, moreover, involves the making of "pragmatic adjustments" . . .And when the Commission's order is challenged in the Courts, the question is whether that order "viewed in its entirety" meets the requirements of the Act. . . Under the statutory standard of "just and reasonable" it is the result reached, not the method employed, which is controlling. . . .It is not the theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry. . .is at end. The fact that the method employed to reach the result may contain certain infirmities is not then important. Moreover the Commission's Order does not become suspect by reason of the fact that it is challenged. It is the product of expert judgment which carries a presumption of validity. And he who would upset the rate order . . . carries the heavy burden of making a convincing showing that it is invalid because it is unjust and unreasonable in its consequences.[13]

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[12] 315 U. S. 575 (1942).

[13] Ibid., p. 602

The Rule of Hope

The meat of the Court's opinion relating to rate of return is contained in the following sentences:

> The rate-making process under the Act, i.e., the fixing of "just and reasonable" rates, involves a balancing of the investor and consumer interests. Thus we stated in the Natural Gas Pipeline Co. case that "regulation does not insure that the business shall produce net revenues."
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> * * *
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> But such considerations aside, the investor has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenues, not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock.
>
> * * *
>
> By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.
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> * * *
>
> The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return may be computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust or unreasonable from the investor or company viewpoint.[14]

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[14] Ibid., p. 603.

There followed a considerable discussion, during which the Court dwelt at length upon Hope's impressive financial history, and other matters which the Commission had considered in arriving at its conclusions. The Court said that the Commission was "wholly justified" in refecting the $66,000,000 rate base computed at reproduction cost new. The Commission's stand was completely upheld.

Commentary

The decision created a considerable stir in public utility, regulatory, financial and legal circles. There seems to have been little doubt in the minds of most observers that the principle of fair return on fair value had been superseded. Many were uncertain as to just what had been substituted therefor.

It was noted that the Court had been far from unanimous in its adoption of the opinion. Eight justices had considered the case; no less than five opinions had been written.[15] Justice Read believed that the cost of exploring for gas, amounting to $17,000,000, should have been included in the rate base.[16] The Commission had disregarded these costs because they had already been counted as operating expenses, an oil business custom. Justice Frankfurthe
back to the Commiss

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[15]Justice Roberts, though a member of the Court at the time, took no part in the decision.

[16]Ibid., pp.620-4.

the criteria by which it had been guided in deciding that the rates fixed were just and reasonable. He did not, however, take issue with the Court in its abandonment of Smyth v. Ames. In fact, he called the latter a "hodge podge."[17]

Justice Jackson wrote a long and rambling dissertation on the natural gas business in which he commented on various things which he thought made it different from other public utility businesses which, indeed, it is. Though he agreed with the principle that rate-making should not be tied to the fair value - reproduction cost formula, he concluded by expressing the opinion that the case should be sent back to the Federal Power Commission so that that body might justify its findings upon economic grounds, rather than upon the legal and accounting principles cited.[18]

Those of the Court who apparently agreed wholeheartedly with Justice Douglas, who delivered the opinion, included only Chief Justice Stone and Justice Rutledge. Justices Black and Murphy concurred, but joined to write short separate opinions in which they took issue with certain statements in Justice Frankfurter's dissent, relating to the due process doctrine. What they said appears to have had nothing to do with the main issue.[19]

Generally speaking the lack of agreement within the Court ap-

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[17]Ibid., pp. 624-8.

[18]Ibid., pp. 628-660.

[19]Ibid., pp. 619-20.

pears not to have been as serious as the diversified cerebrations of these learned justices would seem to indicate. The "end result" doctrine which the Court embraced seemed to have given several of the justices trouble, but there was no dissent upon the proposition that the actual, legitimate original cost of the property was the proper starting point for fair return determination. Nor did there appear to be any substantial disagreement with the proposition that the essential thing to be considered in rate of return determination should be the effect of the return earned upon the ability of the company to attract capital through investor appeal.

Editorial Comment

The comments of Mr. Francis X. Welch, editor of Public Utilities Fortnightly,[20] are worthy of note as being representative of industry reaction to the Hope decision. In an article in the February 3, 1944 edition of that publication Mr. Welch characterized it as being the final act of surrender of judicial domination over the regulatory commissions. We are, he reflected, in the administrative era of public utility regulation. The commissions have been set up as czars in the regulatory field, and the utilities face a regulated future, devoid of judicial review, except under prohibitive conditions. Mr. Welch was also critical of the Court's espousal of the "end result" doctrine. He

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[20] A periodical devoted, in the main, to the regulatory problems of the public utility industry.

said it was based on the dubious moral principle that the end justifies the means. He concluded his article with this baleful observation:

> The commissions are now truly the masters of public regulation, and, on the basis of past performance we can fairly hope that they will prove equal to the task.[21]

The observations of another, and somewhat more optimistic commentator, Mr. Carl I Wheat, are worthy of careful attention. Although Mr. Wheat was in private practice when his comments were written he was, at one time, Telephone Rate Counsel to the Federal Communications Commission. In this capacity he supervised the preparation of an exhaustive study of the rate of return problem which was assembled under the title The Problem of the Rate of Return in Public Utility Regulation with Special Reference to the Long Lines Department of the American Telephone and Telegraph Company.[22]

In a series of articles appearing in the April 27, 1944 and May 11, 1944 editions of Public Utilities Fortnightly Mr. Wheat observed that the Court had long since indicated, in the Bluefield decision,[23] as well as in Justice Brandeis's opinion in the Southwestern Bell Telephone Company case,[24] that the fundamental rate-making objec-

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[21]Francis X. Welch, "On Commission Regulation," Public Utilities Fortnightly, 33:139-151, February 3, 1944

[22]Never formally published, but made available to many government departments in multilith form.

[23]262 U.S. 679 (1923).

[24]262 U.S. 276 (1923).

tive, insofar as return was concerned, should be to produce earnings sufficient to assure a company's financial integrity, and that the measure of that accomplishment offered no practical difficulty. It was, he thought, quite feasible.

In the first of his articles in Public Utilities Fortnightly he said:

> The long-drawn-out legalistic brawls so characteristic of orthodox rate making, and the innumerable difficulties which have always surrounded that process, were natural consequences of the method itself -- a procedure which sought to multiply a figure on which none could agree ('fair value') by another of which little, if anything was known('fair return'), in order to determine allowable earnings under "reasonable rates." A more unrealistic method could hardly have been devised. Now, however, for the first time, those who guide this administrative process may openly, and without fear of reversal, look to the ultimate dollar figure of "return," as an end in itself, rather than having to go through the unprofitable and incongruous ritual of establishing a so-called "fair value" or "rate base" and then multiplying it by a percentage -- a so-called "rate of return" -- in order by such indirection to attempt to reach this very same ultimate result, the dollar figure of "return." This is the new freedom afforded by the Hope case. Now the way is open for a direct approach, and for an objective and realistic consideration of "return" as a dollar figure and as the prime goal of rate making. An immense forward step has been taken.[25]

As previously observed, Mr. Wheat's views have the benefit, at least, of a hopeful and optimistic viewpoint.

Comments of such import notwithstanding, the real test of the soundness of a new judicial doctrine is seldom to be attained until

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[25]Carl I. Wheat, "Does Hope Case Mean Direct Approach to 'Fair Return'?", Public Utilities Fortnightly, 33:536, April 27, 1944

attempts are made to apply them to the solution of current problems. Accordingly the balance of this study will be devoted to an examination of the attempts of a Federal regulatory agency, namely the Federal Power Commission, which was the originator of the Hope case, to adapt these new concepts to the determination of fair rates of return for companies engaged in the interstate transmission and sale for resale of natural gas.

PART II

REGULATION AND THE NATURAL GAS BUSINESS

CHAPTER VIII

DEVELOPMENT OF THE NATURAL GAS BUSINESS

The natural gas business, which provides the background for this study, has been developing very rapidly since the end of World War II. All three of the principal subdivisions of the business -- production, transmission and distribution -- have participated in this development; however, that which has taken place in the pipe line end of the business has been particularly spectacular. This is the phase of the business which is concerned with the collection of gas in those regions in which it occurs in greatest abundance, namely the southwestern states of Texas, Louisiana, Arkansas and Oklahoma, and transmission thereof to the regions in which it is in greatest demand, namely the industrial north and east. California is also an important producer of gas but most of it is consumed within that state's own borders.

As previously noted all companies engaged in the interstate transmission and sale for resale of natural gas -- and this means most of the principal pipe line companies -- are subject to the regulatory authority of the Federal Power Commission.

Early History

It seems appropriate to describe here what has taken places in earlier stages of the industry's development. Natural gas was first discovered at Fredonia, New York, in 1825. Early attempts to

exploit it commercially were not particularly fruitful, and it was not until about fifty years later that it began to be used as a fuel in industrial establishments. About 1873 it was introduced into the potteries in East Liverpool, Ohio, and the iron and steel business at Leechburg, Pennsylvania. In 1883 the Chartiers Valley Gas Company was organized to bring it into Pittsburgh, the first "big city" use. The first long distance pipe line was placed in service in 1891. It was designed to carry gas from Indiana fields into the City of Chicago, a distance of 180 miles. The pipe line was a twin affair, consisting of two eight inch diameter steel pipes, designed for a working pressure of 525 pounds per square inch.[1]

Mid-continent developments. - Construction of natural gas transmission lines in the Mid-continent area began shortly after the turn of the century. In 1904 the Kansas Natural Gas Company was formed to construct a 16-inch line from the Allen, Neosho and Wilson County fields in Kansas to Kansas City and Joplin, Missouri. In 1906 the Wichita Natural Gas Company laid a 12-inch pipe line from the Montgomery County field, in southeastern Kansas to Wichita, Newton and Hutchinson, Kansas. In 1910 lines were constructed to serve these localities from the Hogshooter field in northern Oklahoma. Eastern capital began to be attracted to the Mid-continent natural

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[1]For a detailed history of the earlier stages of the natural gas business see Lewis Stotz and Alexander Jamison, History of the Gas Industry (New York: Stettiner Bros.,1938) Chapter 32.

gas business about 1912 and integrated natural gas companies began to emerge, many of which are still represented in the business to-day. These included: Oklahoma Natural Gas Company, Lone Star Gas Company, Arkansas Natural Gas Company, and others.

Developments in other regions. - Large quantities of natural gas were soon discovered in California, and in 1913 a line was completed to pipe gas from the Kern County fields into Los Angeles, a distance of 150 miles. Meanwhile additional reserves were being uncovered in the Appalachian region from which pipe lines extended to Wheeling, Pittsburgh, Akron, Cleveland, Columbus, Cincinnati, Dayton and Youngstown. By 1925 pipe lines as long as 300 miles had been built; the industry was serving 3,500,000 customers in 23 states, and selling more than one trillion cubic feet of gas a year.[2]

Favorable atmosphere of the late 1920s. - Several developments which occurred during the late 1920s gave further impetus to the construction of long-distance natural gas pipe lines. One very important occurrence was the discovery of huge additional reserves of natural gas in Louisiana, Kansas and Texas. Conservation dictated that this valuable fuel should not be wasted, yet markets nearby were lacking.

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[2]For an account of developments during this period see Natural Gas Investigation (Docket No. G-580) Report of Commissioners Nelson Lee Smith and Harrington Wimberly, Federal Power Commission, Washington, D. C., 1948; Part IV, pp. 237 et seq.

The extension of natural gas pipe lines rec
impetus at this time from perfection, by pipe manufacturers, of a process for producing long sections of thin-walled steel pipe, capable of withstanding high transmission line pressures. There was also an advancement in the art of laying this pipe, and joining the sections in the field.

The economic atmosphere was also favorable. A feeling of unusual prosperity was abroad. Security markets were active and buoyant. Abundant funds appeared to be available for the financing of almost any sort of undertaking which had an air of legitimacy, including, or course, the building of natural gas pipe lines.

New pipe line companies. - In consequence of these circumstances numerous new companies having as their objective the transportation of natural gas much longer distances than had hitherto been attempted. Outstanding among these projects was the 1,000-mile line planned by Natural Gas Pipeline Company of America, which was to carry gas from the prolific fields in the Texas Panhandle to the City of Chicago. This line has, of course, long since been placed in service. A list of the new pipe lines planned or under construction in 1930 is shown in Table I on the following page.

It was no accident that most of these companies were subsidiaries, or joint subsidiaries, of oil and public utility companies. Pipe line building, even in those days, was an expensive affair. Under-

TABLE I

NATURAL GAS PIPE LINES PROJECTED OR UNDER CONSTRUCTION - 1930

Company	From (field) - To (city)	Approximate length
		miles
Natural Gas Pipeline Company of America	Amarillo, Texas - Chicago	1,000
Panhandle Eastern Pipe Line Company	Amarillo, Texas and Hugoton, Kansas - Detroit	950
Northern Natural Gas Company	Amarillo, Texas - Minneapolis and St.Paul	800
Mississippi River Fuel Corp.	Monroe, Louisiana - St. Louis	540
Southern Natural Gas Company	Monroe and Richmond, La.- Atlanta	420
Mountain Fuel Supply Company	Hiawatha Dome, Wyoming - Salt Lake City	380
Colorado Interstate Gas Co.	Amarillo, Texas - Denver	350
Pacific Gas & Electric Co.	Buttonwillow and Kettleman Hills, California - San Francisco	282
Memphis Natural Gas Company (a)	Monroe, Louisiana - Memphis	210
El Paso Natural Gas Company	Lea, New Mexico - El Paso	205
Interstate Natural Gas Company (b)	Monroe, Louisiana - Baton Rouge	170

(a) Merged with Texas Gas Transmission Corp. in 1948.
(b) Now Olin Gas Transmission Corp.

takings such as these required good financial support. The oil companies had the gas, and saw opportunities for profit in selling it. Public utilities saw in natural gas a substitute for the manufactured gas which they were distributing, and a means of stimulating their space heating business.

Natural Gas Pipeline Company, just mentioned, was a joint venture of Peoples Gas Light and Coke Company, the Chicago distributor, and several oil companies. Colorado Interstate Gas Company was a joint venture of Standard Oil Company (New Jersey), Prairie Oil & Gas Company and Cities Service Company, which controlled the utility supplying gas and electricity in Denver. Mississippi River Fuel Corporation was a joint interest of Standard Oil Company (New Jersey), Columbian Carbon Company, United Carbon Company and certain subsidiaries of Electric Bond & Share Company, and so on. It is of passing interest to note that Standard Oil Company (New Jersey) appeared as the owner or joint owner of more natural gas enterprises than any other oil company, or public utility.

Even as these new companies were getting started some of the established units of the natural gas business were formulating plans for extending their facilities. Among them were the subsidiaries of Columbia Gas & Electric Corporation,[3] Lone Star Gas Company, Cities Service Gas Company, United Gas Corporation and Pacific Lighting Com-

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[3]Succeeded by Columbia Gas System, Inc.

pany. Hope Natural Gas Company,[4] an affiliate of Standard Oil Company (New Jersey) was actively extending service from the Appalachian fields. Interstate Natural Gas Company,[5] another affiliate of the same oil company, was active in Louisiana.

Construction completed. - By the time of the 1933 Bank Holiday, which marked the nadir of the Great Depression, most of these projects had been completed and were delivering gas. Precise statistics relative to the status of the pipe line business, apart from the natural gas business as a whole, are not available for this period. One estimate has it that about 90,000 miles of what would now be called transmission pipe line was then in service, some of it as much as 24 inches in diameter, was then in service. About two trillion cubic feet of natural gas was being marketed of which 400 billion cubic feet, or twenty per cent was being transmitted in interstate pipe lines. (See Table 2 on the following page)

Progress halted. - Quite a number of things combined to prevent any further extension of natural gas pipe line facilities during the remainder of the 1930s. Business was in an uncertain state; capital was timid. The public utility business was under heavy attack.

By 1940 war was in the offing; by 1942 the nation was under arms and further enlargement of natural gas transportation facilities,

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[4]See Chapter VII, supra.

[5]Since succeeded by Olin Gas Transmission Corporation.

TABLE II

INTERSTATE MOVEMENT OF NATURAL GAS 1925 - 1955

(millions of cubic feet)

Year	Total Marketed Production	Transported Interstate	
		Volume	Per cent
1925	1,888,571	186,625	16.2
1930	1,943,421	380,601	19.5
1935	1,916,595	469,024	24.5
1940	2,660,222	738,844	27.7
1945	3,918,686	1,105,760	28.2
1950	6,282,060	2,543,538	40.0
1951	7,457,359	3,242,777	43.5
1952	8,013,457	3,794,542	47.4
1953	8,396,916	4,200,793	50.0
1954	8,742,546	4,661,898	53.3
1955	9,405,351	5,104,046	54.3

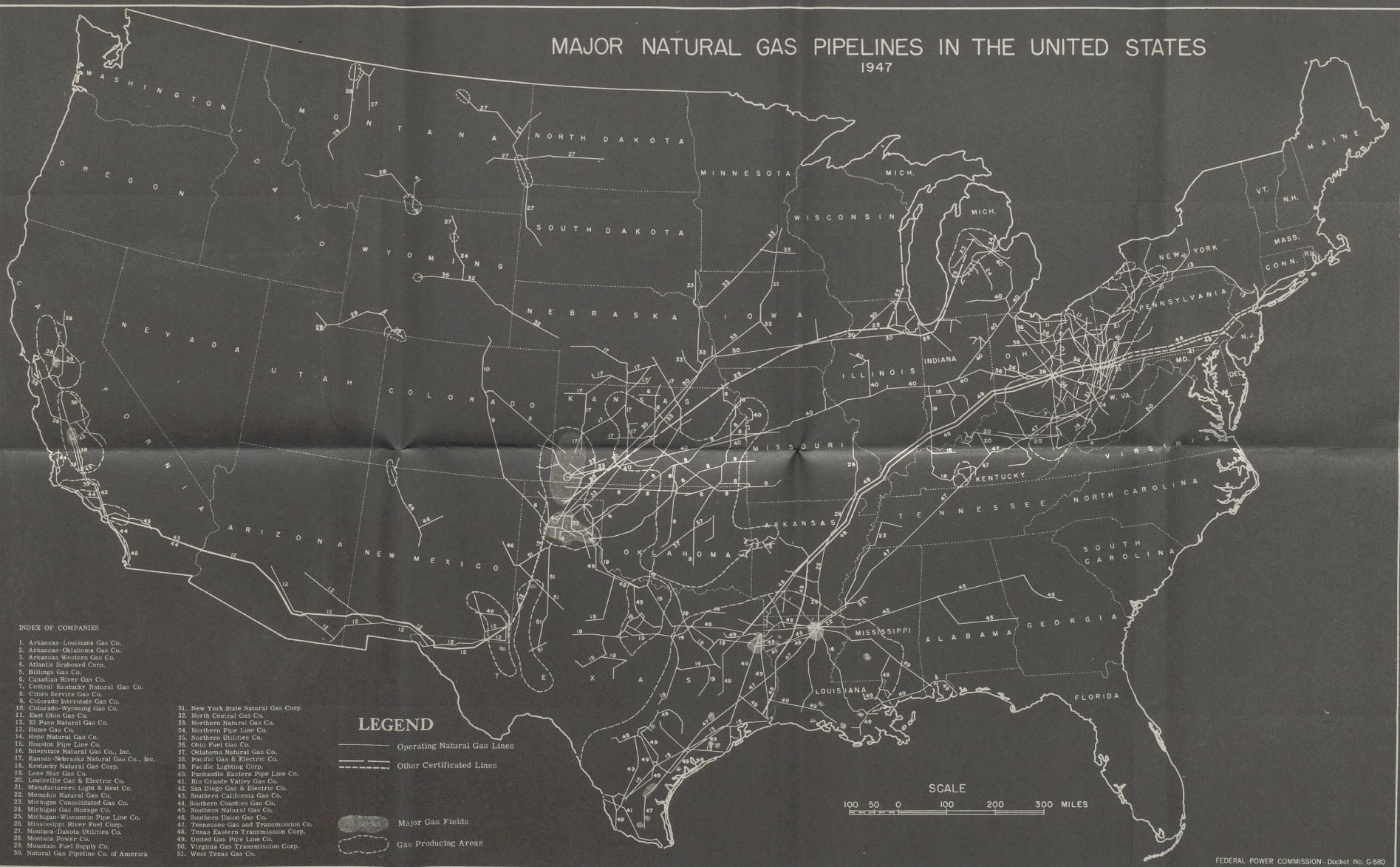
Source: U.S.Department of the Interior, Bureau of Mines, Mineral Industry Surveys

except in direct furtherance of the war effort, would not have been permitted. In 1940, the last pre-war year, 2.6 trillion cubic feet of natural gas was marketed, of which 739 billion cubic feet was transmitted interstate. Transmission line mileage had probably not increased appreciably over 1933; precise figures, however, are not available.

Figure 1 - MAJOR NATURAL GAS PIPE LINES IN THE UNITED STATES 1947

MAJOR NATURAL GAS PIPELINES IN THE UNITED STATES

1947



INDEX OF COMPANIES

1. Arkansas-Louisiana Gas Co.
2. Arkansas-Oklahoma Gas Co.
3. Arkansas Western Gas Co.
4. Atlantic Seaboard Corp.
5. Billings Gas Co.
6. Canadian River Gas Co.
7. Central Kentucky Natural Gas Co.
8. Cities Service Gas Co.
9. Colorado Interstate Gas Co.
10. Colorado-Wyoming Gas Co.
11. East Ohio Gas Co.
12. El Paso Natural Gas Co.
13. Home Gas Co.
14. Hope Natural Gas Co.
15. Houston Pipe Line Co.
16. Interstate Natural Gas Co., Inc.
17. Kansas-Nebraska Natural Gas Co., Inc.
18. Kentucky Natural Gas Corp.
19. Lone Star Gas Co.
20. Louisville Gas & Electric Co.
21. Manufacturers Light & Heat Co.
22. Memphis Natural Gas Co.
23. Michigan Consolidated Gas Co.
24. Michigan Gas Storage Co.
25. Michigan-Wisconsin Pipe Line Co.
26. Mississippi River Fuel Corp.
27. Montana-Dakota Utilities Co.
28. Montana Power Co.
29. Mountain Fuel Supply Co.
30. Natural Gas Pipeline Co. of America
31. New York State Natural Gas Corp.
32. North Central Gas Co.
33. Northern Natural Gas Co.
34. Northern Pipe Line Co.
35. Northern Utilities Co.
36. Ohio Fuel Gas Co.
37. Oklahoma Natural Gas Co.
38. Pacific Gas & Electric Co.
39. Pacific Lighting Corp.
40. Panhandle Eastern Pipe Line Co.
41. Rio Grande Valley Gas Co.
42. San Diego Gas & Electric Co.
43. Southern California Gas Co.
44. Southern Counties Gas Co.
45. Southern Natural Gas Co.
46. Southern Union Gas Co.
47. Tennessee Gas and Transmission Co.
48. Texas Eastern Transmission Corp.
49. United Gas Pipe Line Co.
50. Virginia Gas Transmission Corp.
51. West Texas Gas Co.

LEGEND

- Operating Natural Gas Lines
- Other Certificated Lines
- Major Gas Fields
- Gas Producing Areas

FEDERAL POWER COMMISSION--Docket No. G-580

CHART 1

795106 O - 48 (Face p. 242)

The Post War Phase

By the time World War II was over the stage had been quietly set for the next phase in the development of the natural gas pipe line business. The companies which had been organized during the 1930s were, for the most part, well established and prosperous. Several important markets were still unserved with natural gas. These included the New England states, the New York-New Jersey metropolitan area and the Pacific northwest, not to mention the many important communities everywhere which had been by-passed in the 1930 rush to reach the most important outlets.

At the same time it soon became apparent, after the war, that revived industrial activity and the growth of almost every urban community would soon require the enlargement of existing pipe line facilities. There were other reasons for considering that important days were at hand for the natural gas pipe line business. Among them were the declining popularity of coal as a domestic fuel, and the increasing awareness on the part of householders of the convenience of gas as a domestic fuel, for space heating and kitchen purposes.

Under the influence of these and other stimuli the frontiers of natural gas supply have, during the intervening decade, been pushed to the very borders of the nation and even beyond. The oil and gas country has been searched and researched for new sources, and almost every distributing company in the gas business has jettisoned its manufacturing facilities and signed up for a supply of natural gas.

TABLE III

GROWTH OF THE NATURAL GAS BUSINESS IN THE UNITED STATES

1946 - 1955

	1946	1955
Natural gas reserves - trillions of cubic feet	160	223
Natural gas customers	9,366,000	22,864,000
Natural gas sales - thousands of *therms	22,913,200	63,337,400
Revenues from the sale of natural gas	$ 714,106,000	$ 2,969,542,000

*A therm is 100,000 British Thermal Units; if gas contains 1,000 B.T.U. per cubic foot, a therm would be represented by 100 cubic feet of gas.

Source: Gas Facts, a publication of the American Gas Association.

The development of the natural gas business during the post-war decade may be measured in numerous ways. Shown in Table III, above, are certain of the more significant indicia of this growth.

The 22,864,000 customers shown as being supplied with natural gas at the end of 1955 are the ultimate consumers of this fuel. The figure includes domestic, commercial and industrial accounts. In fact,

they represent the group from which the industry received its nearly $3 billion of revenues, or nearly four times its 1946 revenues. Both figures reflect the substantial conversions of manufactured gas customers into natural gas customers which has taken place during this period, as well as growth in service connections. The figures as to proved recoverable reserves of natural gas are taken from the estimates prepared annually by the Natural Gas Reserve Committee of the American Gas Association; the remarkable thing about them is that they reflect net growth, that is to say growth after substantial withdrawals.

Growth of Pipe Line Companies

Present interest, insofar as this study is concerned, centers in the pipe line companies. These are the companies which, as previously noted, usually stand between the producers and the distributors, although sometimes two or more of these functions may be performed by a single company.

The extent and magnitude of the growth which has been witnessed in this end of the business, during the post-war decade, is outlined in Table 4, which occupies all of the next,and part of the following page of this study. Growth in this end of the business has, perhaps, captured more attention than has the growth in either of the other two ends of the business for two reasons. One is that it has resulted in the delivery of natural gas to more remote regions such as the New York metropolitan area and the New England states, not to mention the

TABLE IV

DEVELOPMENT OF THE NATURAL GAS PIPE LINE BUSINESS

1946 - 1955

	1946	1955
CUSTOMERS and SALES		
Other gas utilities supplied by pipeline companies	423	894
Ultimate consumers supplied by pipeline companies	252,272	473,494
SALES of NATURAL GAS in millions of cubic feet		
Sales to other gas utilities . .	1,309,188	5,402,207
Sales to ultimate consumers . . .	513,500	1,328,051
Total sales	1,822,688	6,730,258
REVENUES, INCOME and DIVIDENDS		
Gas operating revenues	$ 306,033,000	$ 1,881,517,000
Gas operating income	63,769,000	307,772,000
Net income available for dividends	55,870,000	219,321,000
Dividend appropriations -		
Preferred stock	1,926,000	18,029,000
Common stock	36,775,000	131,685,000
Total	38,701,000	149,714,000
ASSETS and PLANT		
Total assets	$ 990,485,000	$ 5,407,805,000
Gas utility plant, less reserves	750,162,000	4,530,636,000

Table continued on following page.

TABLE IV - Continued

	1948	1955
CAPITALIZATION		
Long-term debt	$ 363,417,000	$ 2,920,184,000
Preferred stock	44,125,000	384,705,000
Common stock and surplus	490,014,000	1,528,301,000
Total	$ 897,556,000	$ 4,833,190,000
PIPE LINE MILEAGE		
Transmission pipe line mileage	68,000	110,101

Source: Statistics of Natural Gas Companies 1955, Federal Power Commission, Washington, D. C.

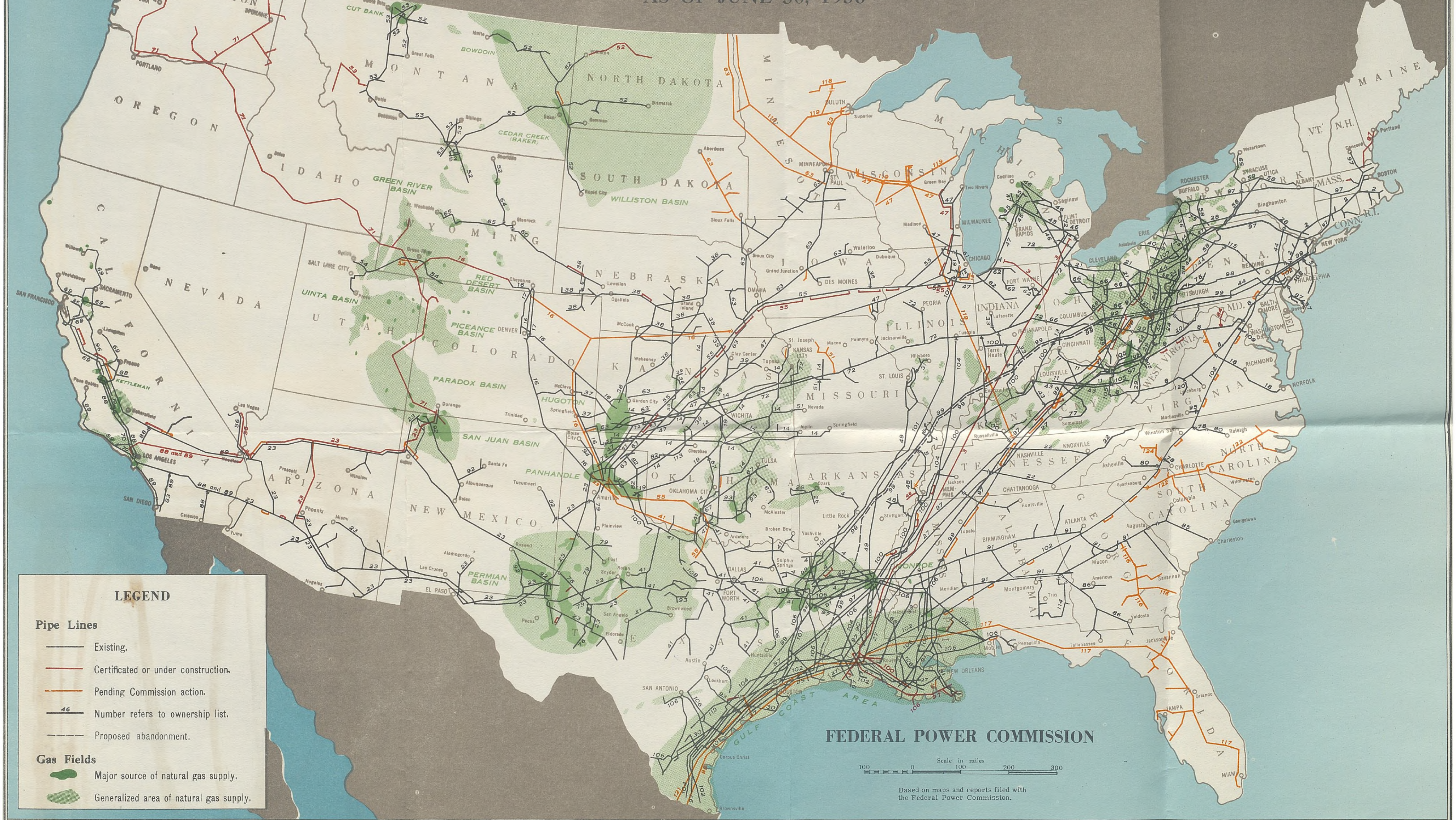
Pacific northwest. Another is that each new pipe line which has been built, and there have been a number of them, has been a gigantic and sometimes spectacular construction job which has appealed to the public interest and stimulated the public imagination.

Financial implications. - Elsewhere in this study, in a chapter entitled "Capital and its Procurement" it will be shown that during this decade the pipe line companies, old and new, have secured through the sale of their securities approximately $3.7 billion of new and additional capital in order to finance this construction. This is apart from the $1.26 billion which has been raised by distribution companies and the approximately similar amount which has been raised by natural gas holding companies, a part of which has gone into pipe line construction.

Figure 2 - MAJOR NATURAL GAS PIPE LINES AS OF JUNE 30, 1956

MAJOR NATURAL GAS PIPE LINES

AS OF JUNE 30, 1956



INDEX OF OPERATING COMPANIES

1 Alabama-Tennessee Natural Gas Co.
2 Algonquin Gas Transmission Co.
3 American Louisiana Pipe Line Co.
4 Arkansas-Louisiana Gas Co.
5 Arkansas-Missouri Power Co.
7 Associated Natural Gas Co.
8 Atlantic Seaboard Corp.
11 Central Kentucky Natural Gas Co.
12 Chicago District Pipeline Co.
13 Cincinnati Gas & Electric Co., The
14 Cities Service Gas Co.
16 Colorado Interstate Gas Co.
17 Colorado-Wyoming Gas Co.
18 Commonwealth Natural Gas Corp.
19 Consolidated Gas Utilities Corp.
20 Cumberland & Allegheny Gas Co.
21 East Ohio Gas Co., The
22 East Tennessee Natural Gas Co.
23 El Paso Natural Gas Co.
24 Equitable Gas Co.
26 Fort Smith Gas Corp.
27 Gulf Interstate Gas Co.
28 Home Gas Co.
29 Hope Natural Gas Co.
30 Houston Pipeline Co.
31 Illinois Power Co.
32 Independent Natural Gas Co.
33 Indiana Gas & Water Co., Inc.
35 Iowa-Illinois Gas & Electric Co.
36 Iroquois Gas Corp.
37 Kansas-Colorado Utilities Co.
38 Kansas-Nebraska Natural Gas Co.
39 Kansas Power & Light Co.
40 Lake Shore Pipe Line Co.
41 Lone Star Gas Co.
43 Louisville Gas & Electric Co.
44 Manufacturers Light & Heat Co., The
45 Michigan Consolidated Gas Co.
46 Michigan Gas Storage Co.
47 Michigan-Wisconsin Pipe Line Co.
48 Mid-South Gas Co.
49 Mississippi River Fuel Corp.
51 Missouri Public Service Co.
52 Montana-Dakota Utilities Co.
53 Montana Power Co.
54 Mountain Fuel Supply Co.
55 Natural Gas Pipeline Co., of America
56 Nevada Natural Gas Pipe Line Co.
57 New Jersey Natural Gas Co.
58 New York State Natural Gas Corp.
59 Niagara Mohawk Power Corp.
60 North Central Gas Co.
61 Northern Illinois Gas Co.
62 Northern Indiana Public Service Co.
63 Northern Natural Gas Co.
64 Northern Pipe Line Co.
65 Northern Utilities Co.
66 Ohio Fuel Gas Co., The
67 Oklahoma Natural Gas Co.
68 Olin Gas Transmission Corp.
69 Pacific Gas & Electric Co.
70 Pacific Lighting Gas Supply Co.
71 Pacific Northwest Pipeline Corp.
72 Panhandle Eastern Pipe Line Co.
73 Penn-York Natural Gas Co.
74 Pennsylvania Gas Co.
75 Peoples Natural Gas Co., The
76 Permian Basin Pipeline Co.
77 Petroleum Exploration, Inc.
78 Piedmont Natural Gas Co., Inc.
79 Pioneer Natural Gas Co.
80 Public Service Co. of N. C., Inc.
82 Public Service Corp. of Texas
83 San Diego Gas & Electric Co.
84 Shenandoah Gas Co.
85 South Carolina Natural Gas Co.
86 South Georgia Natural Gas Co.
87 South Jersey Gas Company
88 Southern California Gas Co.
89 Southern Counties Gas Co. of Calif.
90 Southern Gas Lines, Inc.
91 Southern Natural Gas Co.
92 Southern Union Gas Co.
93 Southwest Natural Gas Co.
94 Southwestern Public Service Co.
95 Southwestern Virginia Gas Co.
96 Standard Pacific Gas Lines, Inc.
97 Tennessee Gas Transmission Co.
98 Texas Eastern Penn-Jersey Trans. Corp.
99 Texas Eastern Transmission Corp.
100 Texas Gas Transmission Corp.
101 Texas Illinois Natural Gas Pipe Line Co.
102 Transcontinental Gas Pipe Line Corp.
104 Trunkline Gas Co.
105 United Fuel Gas Co.
106 United Gas Pipe Line Co.
107 United Natural Gas Co.
108 Upham Gas Company
109 Washington Gas Light Co.
110 West Texas Utilities Co.
112 Wilcox Trend Gathering System, Inc.
113 Zenith Gas System, Inc.
114 Southeast Alabama Gas District
115 Trans-Penn Transit Corp.
116 Georgia Coastal Natural Gas Corp.
117 Houston Texas Gas & Oil Corp.
118 Iron Ranges Natural Gas Co.
119 Midwestern Gas Transmission Corp.
120 Roanoke Pipe Line Co.
121 Coastal Transmission Corp.
122 Trans-Carolina Pipeline Corp.
124 Piedmont Gas Co.

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TABLE V

PRINCIPAL NATURAL GAS PIPE LINE COMPANIES ORGANIZED SINCE 1945

Name of Company	As of December 31, 1955	
	Transmission Line Mileage	Total Assets
Texas Eastern Transmission Corp.	5,301	$ 579,588,000
Transcontinental Gas Pipe Line Corp.	3,022	324,718,000
Texas Gas Transmission Corp.	3,300	171,542,000
Texas Illinois Natural Gas Pipeline Company	1,507	202,383,000
Pacific Northwest Pipeline Corp.	1,466	(a)160,000,000
American Louisiana Pipeline Co.	1,290	(a)147,240,000
Gulf Interstate Gas Co.	1,064	132,309,000
Michigan-Wisconsin Pipe Line Co.	1,592	109,375,000

(a) Approximate initial capitalization.

Note - Although Tennessee Gas Transmission Company, the assets of which totaled $868,018,000 as of December 31, 1955, has figured prominently in the post war development of the natural gas pipe line business, it was not, strictly speaking, a post war company, having been organized in 1940 as the Tennessee Gas & Transmission Company.

Two very important facts are to be noted in connection with this accomplishment. One is that all of this money came from private savings; none of it came from the state. The other is that all of it was advanced voluntarily; no bureaucraft "directed" that these savings

be placed at the disposal of the natural gas companies. Finally there is the fact that a goodly portion of this tremendous sum was furnished the pipe line business "on faith,"that is to say on the strength of engineering, economic and accounting estimates of what the various new projects would bring in the way of a return on the capital funds advanced.

In the pipe line business there is no such thing as a modest start. Pipe line construction may cost as much as $100,000 a mile, and the line must usually be complete in all respects before ever one cubic foot of gas may move through the line and be delivered to a customer and, consequently before a single dollar of revenues can be billed. Confidence is necessary at every stage of these tremendous undertakings, and this includes confidence on the part of entrepreneurs and investors that the regulatory authorities will permit the companies under their jurisdiction to earn a fair rate of return on the capital invested. Otherwise confidence will be destroyed and capital will not be forthcoming for like projects.

CHAPTER IX

REGULATION OF THE NATURAL GAS PIPE LINE BUSINESS

As noted in Chapter V the interstate transmission and sale for resale of natural gas was made subject to the regulatory authority of the Federal Power Commission by an Act of Congress adopted in 1938, usually known as the Natural Gas Act.[1] As result of this law all of the pipe line companies listed in Appendix I are subject to the authority of this Commission.

The Commission in question is one of the so-called Independent Agencies of the United States Government, which means that it is not a part of any one of the major executive departments. It is composed of five members, appointed by the President and confirmed by the United States Senate. Its principal offices are in the City of Washington. It has a staff of more than five hundred employees, many of them lawyers, engineers or accountants.

The regulatory authority exercised by the Commission over natural gas pipe line companies corresponds, in a general way, to the regulatory authority exercised by the public service commissions of the several states over the gas, electric and telephone companies within their respective domains. The Commission exercises similar regulatory authority over companies engaged in the interstate transmission of electrical energy under Part II of the Federal Power Act.[2]

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[1] 15 U.S.Code 717-717w.

[2] 16 U.S.Code 791a-825r.

As result of a 1954 decision of the United States Supreme Court the Commission found, somewhat to its discomfiture, that it was also responsible for regulating several thousand "independent producers" of natural gas if the gas they produced and delivered to pipe line companies ultimately flowed in interstate commerce.[3]

Included among these independent producers are many of the nation's most prominent petroleum companies, as well as many lesser firms, individuals and partnerships. The necessity for regulating these producers has raised numerous new and difficult problems for the Commission, many of which it has not yet satisfactorily solved. It is not intended to deal with this aspect of natural gas company regulation in these pages.

Limits of regulatory authority. - Certain limitations on the authority of the Federal Power Commission to regulate natural gas companies must be noted. The key to these limitations lies in the expression "sale for resale". This means, in effect, that the Commission's authority to regulate rates extends only to gas which is being transported in interstate commerce and sold to other gas utility companies for distribution and sale.

Because of these limitations the rates at which an interstate gas company may sell its gas to power plants, chemical companies, ore smelters or other immediate consumers do not fall under the Commission's

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[3]Phillips Petroleum Co. v. Wisconsin. 347 U.S. 672 (1954).

authority. The Commission may, initially, specify the volume of gas to be sold to such consumers, under its authority to issue certificates of public convenience and necessity for the construction of pipe lines, but it has no authority to dictate the price at which the gas is to be sold. This is usually a matter of direct contract between the supplier and the consumer.

If the interstate companies also engage in the retail distribution of gas, as some of them do, the rates which they charge the retail consumer are not subject to Federal Power Commission jurisdiction, though they may be subject to regulation by state public service commissions or other public authorities.

This does not mean that the pipe line companies are free to charge what they please, for gas is only a fuel, and coal and oil are its active competitors.

Gas tariffs. - In accordance with well defined regulatory practices, every natural gas company which is subject to the jurisdiction of the Federal Power Commission is required to keep schedules of its rates and charges on file with the Federal Power Commsion in Washington, where they are open to public inspection.

Procedure for seeking rate increases. - When a natural gas company desires to alter its rates -- and in recent years "alter" has almost always meant "increase" -- it files a revised schedule with

the Commission. Such filings, often described as rate increase applications, are required to be accompanied by considerable data intended to establish the applicant company's need for the increase. Among other things this data is required to include:

1. A statement showing the applicant's total over-all cost of rendering service during a recent twelve months period. This may ultimately become the "test period."

2. A statement summarizing the over-all gas utility rate base, with supporting statements as to plant cost, accrued depreciation and depletion, and an estimate of the working capital requirement.

3. A statement setting forth the rate of return sought, together with data showing the cost of senior capital, and information relating to earnings on the common stock, representing the equity capital.[3]

Procedure after filing. - The filing of a new tariff gives the Commission and other interested parties thirty days notice of the filing company's intention to raise its rates. The procedure to be followed after that is carefully spelled out in Section 4 of the Natural Gas Act. Briefly, the Commission may then permit the new rates to go into effect, or it may suspend the new rates and order hearings to be

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[3]See General Rules and Regulations including Rules of Practice and Procedure, Federal Power Commission, Washington, D.C., Section 154.63(b)(3), as amended by Order No. 165, adopted May 12, 1953.

held to determine whether or not they are just and reasonable. If the filing company is an important one, and its customers object to the rate increase, this latter course is almost certain to be the one followed. It may be noted here that the principal customers of natural gas pipe line companies are, themselves, in the gas business. They are fully aware of the implications of a rate increase and fully capable of fighting it with skilled and experienced legal assistance if they consider that they are being imposed upon.

Time consuming. - If hearings are held they may take many months; however, when six months have elapsed after the time of filing the applicant company may petition the Commission to permit the new rates to go into effect under bond. This places the applicant company under the necessity for making refunds in case the rates allowed are less than the rates sought. Meanwhile the Commission usually stands ready to consider a compromise between the various parties to the proceedings, if this can be arranged.

An inquiry into the lawfulness of existing rates may also be undertaken by the Commission on its own motion, or upon receipt of complaints from any state, municipality or state public service commission.[4]

If, after hearings, the Commission finds that the rates charged, or proposed to be charged, are unjust, unreasonable or unduly discrimi-

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[4]Section 13 of the Natural Gas Act. It is of interest to note that the Hope decision, referred to in Chapter VII of this study, was the outcome of complaints lodged with the Commission by the cities of Akron and Cleveland and the Pennsylvania Public Service Commission.

natory, it may prescribe new rates which will fulfill such standards. However, it may not in so doing raise rates or prescribe rates which would be higher than those proposed by the applicant.

Rate Base

One of the things which the Federal Power Commission may do during the rate-making process is to ascertain the

> Actual, legitimate net cost of the property of every natural-gas company, the depreciation therein and, when found necessary for rate-making purposes, other facts which bear upon the determination of such costs or depreciation and the fair value of the property.[5]

When found in fulfillment of the rate-making function the "actual legitimate net cost" referred to in this quotation from the Natural Gas Act, may constitute the rate base described in Chapter II of this study. As a matter of policy the Federal Power Commission, in exercising its rate-making function, has adhered to the principle that the actual legitimate net cost is also the fair value of the property as well as the rate base.

Allocation. - As mentioned earlier, in Chapter III, a unique aspect of the rate-making problem is encountered when only a portion of the business of a particular public utility is subject to the jurisdiction of a particular regulatory agency.

Such situations are of fairly frequent occurrence in the natural gas pipe line business because only the "sale for resale" business

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[5]Section 6(a) of the Natural Gas Act.

is subject to Federal Power Commission regulation.

When this occurs costs, and properties pertaining to the exempt business, must be excluded from consideration by the allocation process. By use of certain formulae, and considerable judgment, experienced accountants can segregate the operating costs relating to the non-jurisdictional business from the total operating costs, and construct what might be termed a pro forma cost of service relating to the jurisdictional business. In somewhat the same way accountants can devise a rate base reflecting this division. This is often confusing to the public for the cost of service and rate base taken into consideration in the rate case may, and often does differ appreciably from what might seem appropriate, after perusal of the company's published reports.

Necessarily the element of judgment which enters into the allocation process can offer lead to sharp differences of opinion among various accountants, for it is usually to the advantage of the applicant to put as much of its costs as possible into the jurisdictional cost of service, and as much of its plant and equipment as possible into the jurisdictional rate base.

It is similarly to the advantage of the consumer to have as much as possible of both put into the jurisdictional business. In the final analysis all differences of opinion of this sort must ultimately be adjudicated by the regulatory agency.

Rate of Return

The rate of return, being a ratio, does not require allocation, at least on the basis of the over-all approach. Whatever rate is decided upon as being fair is merely applied to the jurisdictional rate base to determine the amount of return to be included in the cost of service for rate-making purposes. The rate of return from the unregulated portion of the business as, for example, in the pipe line business, the return from direct industrial sales, may be more or it may be less than the return from the regulated portion and would, presumably, be competitively determined.

Importance of the rate of return. - The importance of the rate of return as an economic factor in the natural gas business is not difficult to demonstrate. The composite gas utility plant, less reserves, of natural gas companies subject to Federal Power Commission jurisdiction as of the end of 1955 was $4,530,636,000 or thereabouts.[6] This figure will serve, for illustrative purposes, as a measure of the composite net investment rate base as of that date.

An upward adjustment of one-quarter of one percent in a rate of return applied to this rate base will add $11,326,590 annually to the revenues of these companies and, by the same token, would add a similar sum, less deductions for Federal income taxes, to the composite return. It would decrease annual charges and profits by similar amounts if the adjustments were downward. It would have the same effect as adding $188,814,000 to the net investment rate base, or sub-

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[6] See Table 4, page 90 supra.

TABLE VI

DIFFERENCE IN RETURN RESULTING FROM ¼ OF 1 PER CENT INCREASE IN THE RATE OF RETURN

Rate Base	Rate of Return	Return
$4,530,636,000	6.00%	$271,838,160
4,530,636,000	6.25%	283,164,750
Difference	0.25%	$ 11,326,590

DIFFERENCE IN RATE BASE NECESSARY TO PRODUCE AN ADDED RETURN OF $11,326,590 CAPITALIZED AT 6 PER CENT

Rate of Return	Return	Rate Base
6%	$271,838,160	$4,531,542,000
6%	283,164,750	4,720,536,000
Difference	$ 11,326,590	$ 188,814,000

tracting a similar sum therefrom, as the case may be. Table VI, above emphasizes these points. The coordinate importance of the rate of return with other factors in public utility rate-making, spoken of by Dr. Clemens in his discussion of the subject, is thus emphasized and illustrated.[7]

[7]Clemens, Economics and Public Utilities, p. 217.

CHAPTER X

THE 1952 OPINIONS

The Federal Power Commission, in its role as regulator of the natural gas pipe line business, was one of the first of the regulatory agencies to implement the new fair return principles which the Supreme Court had laid down in the Hope decision. During 1952 it issued a series of three opinions in which, among other things, it seemed to be pursuing an approach to the rate of return question which was the cause of considerable concern to the public utility industry. Prior to this time, it should be noted, it had been the custom of this Commission, and of regulatory agencies generally, to fall back on some standard or traditional rate, like six per cent, when it came to a matter of rate of return, and to dismiss the issue with a minimum of discussion.

In these new opinions, as will presently be shown, the Federal Power Commission went into considerable detail to explain its position in the matter of rate of return, and it seemed to be pursuing a line of approach which strongly suggested the probability of less liberal allowances henceforth.

Companies concerned. - The natural gas pipe line companies immediately concerned were Northern Natural Gas Company, Mississippi River Fuel Corporation and Colorado Interstate Gas Company. All three were what might be called "old line" natural gas companies. That is to

say, they had been in the natural gas pipe line business since 1930, they were well established and prosperous. Two were applicants for rate increases. In the case of Colorado Interstate Gas Company, a rate investigation had been instituted by the Commission itself.

Northern Natural Gas Company

The first of these three opinions, and the one which seemed to have caused the most concern, was Federal Power Commission Opinion No. 228, issued June 10, 1952 in the matter of Northern Natural Gas Company.

Northern's pipe line system carried gas from the Amarillo and Hugoton fields of Texas and Kansas, northeastward to consuming centers in Minnesota, Iowa and Nebraska. It sold gas for resale to non-affiliated distribution companies serving such places as Omaha, Nebraska; Sioux Falls, South Dakota; Council Bluffs, Iowa and Minneapolis and St. Paul, Minnesota. It also distributed gas in a number of smaller communities, mostly in Nebraska, through its Peoples Natural Gas Division. This phase of its business was not subject to Federal jurisdiction.

Northern had been in business since 1930; its investment credit was excellent and it had borrowed a good part of its capital at low interest rates. Its stock, which was listed on the New York Stock Exchange, had been on a dividend basis since 1935. As of the end of 1951 it was estimated that Northern owned, or controlled under contract, approximately six billion cubic feet of natural gas. As gas

company reserves went these were substantial; moreover they had been assembled during times when gas was abundant, and therefore cheap.

Rate increases sought. - The foundation for Opinion No. 228 was laid March 27, 1950, when Northern filed new rate schedules, increasing its rates. It estimated that the rates for which it applied would increase the revenues from the regulated portion of its business by $10,000,000. Northern claimed that these rate increases were necessary because of rising costs, a not unusual post-war complaint.

The proposed new rates were promptly suspended by the Federal Power Commission and the case was set down for a hearing. Later on the new rates were permitted to go into effect under bond. A futher rate increase was filed during October, 1950, and in January, 1951 Northern asked for certain changes in its tariffs. These additional increases and changes ultimately went into effect under bond, also.

Hearings were held during 1950 and 1951. There were numerous intervenors, most of them customers of Northern, opposing the rate increase.

Examiner's decision.— During January, 1952, the presiding examiner in the case filed his decision. After some discusssion of the testimony of various rate of return witnesses he came to the conclusion that six per cent would be a just and reasonable rate of return. He noted, however, that the Staff of the Commission had recommended five and one-half per cent.

The presiding examiner at a Federal Power Commission hearing is the officer who conducts the hearings and passes first judgment on the testimony and evidence. Before his decision can take effect it must be formally adopted by the Commission itself. In the process of adoption it may also be modified, or the Commission may reject it and write a new decision. In this instance numerous parties to the proceedings, including the Commission staff,[1] took exceptions to various aspects of the examiner's decision. These objections were heard at oral argument during March, 1952. In June, 1952 the Commission handed down its opinion, previously referred to as Opinion No. 228.[2]

Rate of return. - In deciding the case the Commission virtually discarded the presiding examiner's decision and wrote a new one. In the matter of return, and rate of return, it found a net investment rate base, representing properties devoted to the interstate business, of $129,945,031. Cost of service was estimated at $38,041,317 and this included $7,146,977 by way of return, which was equal to five and one-half per cent on the rate base, aforesaid.

With respect to this finding the Commission observed:

> Northern contends that a fair return in this case is not less than 6%, whereas the Staff contends that a fair rate of return is not in excess of 5½%. We have examined

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[1]The staff of the Commission will frequently take an adversary position in rate proceedings.

[2]In the matter of Northern Natural Gas Company, F.P.C.Docket Nos. G-1382, G-1533 and G-1607. Mimeograph edition: June 10, 1952.

> all the available evidence of record on this subject and are convinced and find that a 5½% rate of return will produce a fair and equitable "end result."[3]

Capital costs emphasized. - In explaining why it considered a five and one-half per cent rate of return adequate the Commission directed most of its discussion to the capitalization of Northern, and its outstanding securities. The capitalization totalled $139,000,000, which was about $10,000,000 more than the rate base. It was made up of fifty-six per cent long-term debt and forty-four per cent common equity. The long-term debt, totalling $78,000,000, consisted of five issues of debentures, all of which had been offered for sale publicly, through underwriters, on favorable terms. The weighted average cost of this debt was 2.55 per cent, which was exceptionally low. This was the historic or "experienced" cost of this debt capital; the Commission found it a proper measure of the cost of borrowed capital.[4]

Northern had called attention to the fact that borrowed capital might cost more in the future. To this the Commission replied that rate-making was a continuous process, and that when higher costs were encountered Northern might make that fact known in subsequent rate proceedings. This rejoinder was to appear many times in defense of historical cost.

Common equity. - No preferred stock capital was involved, for Northern had none outstanding. The Common equity was represented by

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[3]Ibid., p. 14, mimeographed edition.

[4]The significance of such terms as experienced cost and historical cost will be more fully explained in Chapter XV, infra.

2,740,500 shares, having a par value of $10 each plus approximately $34,000,000 of premium, capital and earned surplus.

On the all-important question of a proper allowance for equity capital the Commission first set forth its concept as to what investors had been seeking of natural gas stocks in general, and Northern Natural Gas common in particular, when they had bought them over a period commencing in 1946 and ending in 1951. It mentioned such things as earnings-price ratios, dividend rates and earnings payouts, and indicated that it considered them to be indicative of investors' requirements. [5]

Formula employed. - The Commission did not then proceed to select an appropriate equity return for Northern, based on such data. On the contrary it appears to have approached the question inductively by first selecting a rate of return and then trying to see whether the resulting return to common equity, after an allowance for the debt capital component, was compatible with the data selected as indicative of investors' requirements. To do this it resorted to a calculation or formula which appears as a footnote to that section of the Opinion dealing with rate of return. This footnote is reproduced at the top of the following page.

Allowance for common equity. - The resulting allowance for the common equity of Northern, after the adjustment mentioned in the last

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[5] The significance of such terms as earnings-price ratios, payout, yield, etc. in Chapter XVI, infra.

"COST OF CAPITAL" CALCULATION AS FIRST EMPLOYED BY THE FEDERAL POWER COMMISSION IN THE NORTHERN NATURAL GAS OPINION

56% bonds x 2.55% cost of borrowed money	-	1.43%
44% common equity x 9.25% return on common	-	4.07%
100% Over-all rate of return		5.50%

The earnings-price ratios do not include or reflect the cost of flotation. Therefore, in order to compare these ratios with the return provided on the common stock equity by a 5-½% rate of return, it is necessary to adjust the 9.25% by a representative cost of flotation, ½%.

F.P.C. Opinion No. 228, mimeographed edition, page 17, fn. 13.

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line of the addenda to this calculation (see above) would have been 8.75%. The Commission concluded the rate of return section of the Opinion with the following statement:

> An 8.75% allowance for common equity with a 62.7% pay-out will result in a yield of 5.49% which is in excess of the average yield of the seven companies since 1945. We find, therefore, that a 5½% rate of return for Northern is fair and reasonable.[6]

Effect on rates. - As result of this ruling most of the revised rate schedules filed by Northern were rejected as unjust and unreasonable. Lower rates were prescribed. Over-all Northern obtained, by way of rate relief, approximately fifty per cent of what it had asked.

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[6]Opinion No. 228, mimeographed edition, p. 18.

Insofar as this study is concerned, the one important thing to be noted in connection with this ruling is the calculation, set forth herein, at the top of the page preceding this one. It was of this formula, or calculation, that the critics later spoke when they observed that the Commission was seeking to reduce the judgement factor in rate of return fixing to a mathematical formula, and tying it into stock market prices. This is the "cost of capital" calculation, or formula, which will be examined in greater detail in subsequent pages of this study.

Mississippi River Fuel Corporation

The second most important opinion to issue from the Federal Power Commission's meeting room, embodying the allegedly new approach to the rate of return question, was Opinion No. 234, issued July 29, 1952. It dealt with the rate increase application of Mississippi River Fuel Corporation, another "old line" natural gas company, which had been organized in 1928 to bring gas up from the Monroe fields, in Louisiana, to St. Louis, Missouri.

Solely a wholesaler. - Mississippi River Fuel Corporation was solely a wholesaler of natural gas. Some of its gas was sold to Laclede Gas Light Company, the distributor serving the City of St. Louis. Some of it was sold to Illinois Power Company, for distribution in Alton and East St. Louis. Certain other retailers were also supplied, but about sixty per cent of operating revenues was derived from sales

to several large scale industrial consumers which sales were not, of course, subject to Federal regulation.

Rate increase sought. - In 1951 Mississippi had filed new rate schedules with the Federal Power Commission, applying to its sale for resale business. In the proceedings which followed it contended for a rate base of $47,901,000 and submitted an estimated cost of service of $22,844,485, which included a return of $3,113,616 which was equal to six and one-half per cent of the rate base.

Commission findings. - In its Opinion No. 234, dated July 29, 1952 the Commission found a net investment rate base for Mississippi of $45,516,439, said to represent the properties devoted to the interstate business. This was equal to about 90 per cent of the net plant, per books, as of the end of the preceding calendar year. Cost of service estimates were revised to $20,615,768 which included a return of $2,730,986, equal to six per cent of the rate base, aforesaid.

Capitalization considered. - In coming to the conclusion that a six per cent rate of return would produce a fair and equitable "end result" the Commission dwelt exclusively on factors relating to the capitalization of the company, the cost of servicing debt capital, and upon the earnings, dividends, payout and yield of the company's common stock.

In respect of debt capital the Commission indicated that it had taken into consideration a "cost of servicing" this debt of 3.50 per cent. This was, in reality, historic cost, except that it took ac-

count of the cost of servicing a new issue which had just been sold, bearing a 3-5/8 per cent interest coupon.

In regard to equity capital the Commission first set up a sort of standard -- evidently an average -- which it called "investor's appraisals of the common stocks of seven natural gas companies"which stocks were held by the public and traded on recognized exchanges, and therefore had a relatively active market. It observed that this average indicated that over a five and one-half year period investors had been requiring a return of 8.1 per cent on funds invested in the purchase of such shares. Return meant earnings in relation to market value, rather than dividend return, for the opinion went on to say that the same stocks had shown an average yield[7] of 5.1 per cent during that period. This was associated with a dividend payout equal to about 57 per cent of earnings.

On this showing Mississippi's request for an allowance of 10½ per cent was turned down. The equity allowance was reduced to 9½ per cent, or nine per cent "after allowing ½% to cover cost of financing." A nine per cent allowance for the equity, with a 66-2/3 per cent dividend payout, the Commission reasoned, would result in a yield of six per cent, which was better than the showing made by the seven stocks with which Mississippi was being compared.

Formula employed. - The "cost of capital" formula, previously

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[7]A financial term meaning the annual dividend rate divided by the market price.

mentioned, appears in brief form as a footnote to the concluding paragraph of the rate of return section of this opinion. It was set forth as follows:

58%	x	3.50%	=	2.03%
42%	x	9.50%	=	3.99%
100%				6.02%

The Commission concluded its discussion of rate of return by saying that since Mississippi's direct industrial sales were not regulated, stockholders would likely realize a higher return on their investments than the Commission had allowed them as their share in the regulated business.

Colorado Interstate Gas Company

The third opinion to exemplify the Federal Power Commission's "new look" at rate of return determination was Opinion No. 235, also issued during July 1952, in the matter of Colorado Interstate Gas Company.[7a] The circumstances leading up to this opinion were slightly different from those which had resulted in the other two, in that it represented the climax of an investigation of Colorado's rates which the Commission had undertaken on its own motion.

History. - Colorado had been organized in 1928 under the auspices of certain oil and public utility companies[8] to bring natural gas into the state of Colorado from the Amarillo and Hugoton fields of Kansas and Texas. It sold no gas at retail. One of its principal

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[7a] 11 F.P.C. 324

[8] See page 83, supra.

customers, and one of its principal stockholders, was Public Service Company of Colorado, the electric and gas utility serving Denver. In 1951 Colorado had merged with its principal natural gas producing affiliate, Canadian River Gas Company. In the following year Colorado became a publicly owned corporation, after certain of its original sponsors sold their shares.

As previously noted, the purpose of the rate investigation which the Federal Power Commission had instituted was to determine whether or not the rates charged by Colorado were just and reasonable. The Commission's finding was in the negative and the company was ordered to reduce its rates. The rate reduction aggregated $3,227,000.

Rate base and cost of service. - In the details of the case the company and the Commission were not far apart as to the rate base. The Commission adopted a value of $57,048,988, or only $150,000 less than the company had claimed. There was, however, a divergence of opinion as to whether Colorado should be permitted to deduct in cost of service for the losses which it allegedly suffered as result of its operation of a plant which extracted gasoline and other liquid hydrocarbons from the "raw" gas before it was introduced into the pipe line.

The Commission refused to allow the company to do this. It also trimmed various other items entering into the company's cost of service estimates, including the rate of return, which it cut to 5-3/4 percent.

The Commission observed that this 5-3/4 per cent return seemed fair and reasonable, and adequate to assure confidence in the financial soundness of the utility; to maintain its credit, and to enable it to attract the capital necessary for the proper discharge of its public duties.[9]

In arriving at its conclusion that 5-3/4 per cent was fair and reasonable the Commission went into considerable detail concerning Colorado's capitalization and capital costs.

As of December 31, 1951 the capitalization of the company had been as follows:

	Amount	Per cent
Long-term debt	$29,600,000	53.9
Preferred stock	2,000,000	3.6
Common stock and surplus	23,314,000	42.5
Total	$54,914,000	100.0

In discussing capital costs the Commission concluded that 3.21 per cent, the historic cost, was an appropriate allowance for debt capital. In the case of the preferred stock it allowed six per cent, the annual dividend rate.

Allowance for common. - In the matter of an appropriate allowance for the common stock it should be noted that one of the principal hinderances to an accurate determination of this factor was that up until a short while prior to the hearings the stock had

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[9]Opinion No. 235, Federal Power Commission, mimeographed edition, p. 42.

been closely held. That is to say, there was no quoted market for the stock or indication as to the price at which it might change hands. In short "investors' appraisals" were lacking.

To get around this difficulty Colorado sought to show that eleven per cent would have been an appropriate allowance. To support this claim it had offered expert testimony based upon the relationship of earnings to the net proceeds resulting from the recent sales to the public of the common stock of eight different natural gas companies. The Commission rejected this evidence on the ground that all but one of the offerings had been to the stockholders of the companies, through a device known as "rights," and at prices below market.[10] It said

> Such types of offerings do not represent the best prices that these companies could have received and, therefore, the results obtained therefrom cannot be wholly relied upon in determining the investors' appraisal of the cost of equity capital.[11]

Return allowed. - The Commission fixed an appropriate allowance for the common at 8.95 per cent, or 8.45 per cent after an allowance of one-half of one percent to cover what it described as financing costs. In arriving at the conclusion that this was fair the Commission indicated that it had given consideration to statistics showing that a group of publicly traded natural gas pipe line company

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[10]For a discussion of the subject of rights in cost of capital determination see Chapter XIII infra.

[11]F.P.C. Opinion No. 235, pp. 38-9.

stocks had been selling on an average earnings-price ratio basis of 8.2 per cent during the five year period preceding August, 1951.[12] The Commission also indicated that it had given consideration to the price obtained on the occasion of a public offering of Colorado's own common stock, which had taken place just two days prior to the close of the hearings. This stock had been offered for sale at $26.75 per share, and the selling stockholders, who were Sinclair Oil Corporation and four investment banking concerns, had netted $25.25 a share therefor, after the payment of all expenses, including underwriting fees. Based on the earnings of $1.88 per share shown at the time, this was on an earnings-price ratio basis of seven per cent. The Commission further noted that the offering had been oversubscribed, suggesting that in the opinion of those who bought it it was not at all overpriced at the offering figure.

No formula. - It should be noted that in this Opinion the Commission did not allude to a calculation or formula, such as it had used in the Northern Natural and Mississippi River Fuel opinions previously discussed. However the use of such a formula was implicit in the data used and conclusions formed. Had such a formula been used it would probably taken the form shown at the top of the following page.

Rehearing. - Colorado moved for a rehearing, and a stay of the Commission's Order reducing rates. The substance of its complaints

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[12] Later on it will be shown that the earnings-price ratio, or rate at which earnings are capitalized, is one of the chief clues to the cost of equity capital.

Cost of Capital Calculation probably employed in the

Colorado Interstate Opinion

Long-term debt	53.9%	@ 3.21%	=	1.73%
Preferred stock	3.6%	@ 6.00%	=	.21
Common stock and surplus	42.5%	@ 8.95%	=	3.81
Rate of Return allowed				5.75%

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with respect to rate of return were (a) that the Commission had used the historic cost of debt capital rather than its replacement cost; (b) that in determining the return to be allowed on equity capital it had applied its 8.45 per cent to the book value, rather than to the market value of the equity; and (c) that it had been cut down to the "bare bones" cost of its capital, whereas it needed an "extra fillip" in the rate of return to make its offerings more attractive to investors in the future.

Review. - In reviewing the case in the light of these complaints the Commission yielded nothing on any of these points. With respect to the "extra fillip" which Colorado insisted was necessary in order to make its securities more attractive to investors the Commission said that such an allowance was not even remotely appropriate, insofar as debt securities were concerned. With respect to equity securities the Commission proceeded to compare the going rate for equity capital for natural gas companies, which it found to be 8.3 per cent, with the offering rate on the Colorado Interstate stock sale, which

was 7 per cent. The Commission observed that all this had been taken into consideration when it allowed 8.45 per cent for the common equity. It said:

> Our rate of return of 5.75% when broken down by capital elements, results in an 8.45% return on the common equity after an allowance of ½% for the cost of floating the stock. Accordingly we allowed more than the "bare bones" cost of capital.[13]

Concerning the other point, namely, the applicability of the rate of 8.45 per cent to the market value, rather than to the book value, of the common stock, the Commission said:

> Such an application would have the effect of departing from the investment rate base and substituting, in part a fair value rate base according to the proportion of common stock to other capital of the company.[14]

Appeal. - Colorado Interstate appealed to the Circuit Court of Appeals for a review of the Commission's Order, stemming from the Opinions in this case. The appeal was made on several grounds, rate of return being one.

The Court of Appeals for the Tenth Circuit examined the matter at considerable length and came to the following conclusion as regards the rate of return issue:

> While the rate of return of 5-3/4% is lower than any rate heretofore established which has been called to our

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[13]F.P.C.Opinion No. 235-A, September 26, 1952, mimeographed edition, p. 6.

[14]F.P.C.Opinion No. 235-A, p. 17.

> attention, that in itself is not suspect, nor may we overturn it merely because we as the trier of facts might have established a higher rate. From the record we cannot say that a rate of return of 5-3/4% properly computed is unreasonable and therefore confiscatory.[15]

The Order of the Commission was reversed and remanded to the Commission for reasons other than rate of return. The matter was ultimately brought to the attention of the United States Supreme Court, but rate of return was not an issue.[16] For all intents and purposes the Court of Appeals ruling would appear to have been final.

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The Northern Natural Gas Opinion, the Mississippi River Fuel Opinion, and the Colorado Interstate Opinion caused much concern in regulatory circles. This aspect of the matter will be examined in the next chapter.

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[15] U.S.C.A. 10, No. 4541, 731.

[16] 348 U.S. 818

CHAPTER XI

AFTERMATH

Investor and industry reaction to the opinions outlined in the preceding chapter was not favorable. The first cry of alarm against them was raised in the September 2, 1952 edition of The Outlook, a weekly publication devoted to stock market forecasting, security analysis and investment counsel.[1]

In an article headlined "New Rate Policy Clouds Gas Outlook" the editors of that publication observed that the new approach to rate-making, exemplified by these decisions, would limit the market movements of natural gas equity stocks, put a ceiling upon earnings, and rob natural gas stocks of their "growth" appeal. By way of remedy the article recommended a change in the personnel of the Federal Power Commission, Congressional legislation, and an appeal to the courts.

The industry. - Speaking before the New York Society of Security Analysts during October, 1952, Mr. Paul Kayser, President of El Paso Natural Gas Company, a prominent industry unit, said that uncertainties due to Federal Power Commission adoption of a formula method for setting the rate of return would ". . . check the flow of

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[1]Published by Standard & Poor's Corporation, New York, N.Y. A photostat copy of this article is furnished in the Appendix.

money available for the growth of the pipe lines."

Investors. - In a paper which was read before the Independent Natural Gas Producers Association in convention at Omaha, at about the same time, Mr. H. C. Hagerty, Financial Vice President of the Metropolitan Life Insurance Company characterized this procedure, which he termed a "cost of money" approach,as being "mechanistic" and tending to "establish impossible rate-making problems," since it was "tied to price fluctuations of the stock market." He also called it faulty because it dealt largely with the historic past and refused to recognize that investors were concerned with future prospects. He said further that the method provided no compensation, or marginal award, for managerial efficiency, and would result in different returns being fixed for different companies, according to their capital structures. He, too, concluded that the "new approach" would "drastically hamper the raising of new capital."[2]

The Metropolitan, it might be noted, had been a heavy investor in the bonds of many of the pipe line companies. So far as can be determined it did not sell any of the bonds which it was holding at the time of these decisions and has, as a matter of fact, bought many more.

Editorial. - The concern of the natural gas industry was also noted editorially in Public Utilities Fortnightly, a periodical which, as suggested by previous quotations therefrom, acts as a forum

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[2]Mr. Arnold LaForce, another investment officer of the Metropolitan, who is now Financial Vice President of El Paso Natural Gas Company, was co-author of this paper.

for the discussion of various matters affecting the public utility business, including, particularly, regulatory matters.

Under the caption "What Others Think" there appeared in the November 6, 1952 edition of this publication the following comment:

> It is no longer any secret that there is an increasing concern in the natural gas industry over restrictive regulatory policies of the Federal Power Commission.

The article cited the Northern, Mississippi and Colorado Interstate opinions and hinted, darkly, that the industry might organize a "task force" to seek remedial legislative action.

In the same edition of Public Utilities Fortnightly Mr. Owen Ely, its financial editor, inquired as to whether the Federal Power Commission was "turning a damper on natural gas expansion," and reported that in the opinion of many Wall Street observers the Commission was paying only perfunctory attention to the Supreme Court objective of making it possible for public utilities to raise capital. He concluded that such opinions as these would only servie to make it more difficult for the industry to finance.[3]

Opinions of sundry "experts." - Another commentator on the situation in Public Utilities Fortnightly was Dr. Ralph E. Badger, a professional witness on investment matters. Dr. Badger was critical of the new approach because, he said, something which he called the

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[3]Vol. L, No. 10, p. 734 and p. 727.

"growth factor" had been neglected in fixing the rate of return.[4] It will be recalled that The Outlook article commenting on the Northern Natural Gas opinion voiced a similar complaint.

It appears from Dr. Badger's testimony in various rate cases before the Federal Power Commission that the growth factor is a measure of the rate at which a corporation grows by reinvesting portions of its profits in the business, instead of paying them out as dividends. This process is sometimes also called "plough back."[5]

In a series of articles in Public Utilities Fortnightly Dr. J. Rhoads Foster, a public utility economist, criticized the new approach from a number of angles, but seemed particularly concerned because allowances were not being made for the depreciation in purchasing power which the dollar had suffered since the end of World War II.[6]

Numerous other complaints, in similar vein, were expressed in various other publications following the issuance of these opinions.

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[4]Badger, R.E., "Impact of the Northern Natural Gas Decision on Financing," L:11 (November 10, 1952), pp. 751-60.

[5]According to Dr. Clemens's views, outlined at pp. 39-40, supra, "the inclusion within the allowable return of a certain amount in excess of dividend requirements to be credited to surplus is of doubtful propriety." Accepting the premise that investors generally expect a certain portion of profits to be reinvested in the business, it would seem as if the "growth factor" resulting from "plough back" would be a matter which is up to the board of directors of the enterprise, rather than the regulatory agency which merely sets the overall rate of return.

[6]Foster, J.R., "Capital Cost and Fair Return," LIII:5 (March 4, 1954) pp. 267-282; 6 (March 18, 1954), pp. 340-346; 7 (April 1, 1954), pp. 421-433.

Federal Power Commission defense. - Federal Power Commission members were quick to deny that there was anything new or novel about what they had done. In an address to the same New York Society of Security Analysts which Mr. Kayser had addressed, Chairman Buchanan of the Commission said that financial data, bearing upon the cost of capital, had been introduced in rate cases as far back as he could remember. Dr. Nelson Lee Smith, another member of the Commission, and an undoubted authority on rate of return,[7] told the American Bar Association that there was nothing novel about what the Commission had done, or anything fixed or immutable about the six per cent rate, which had been undercut in two instances.

The crux of the issue. - It may be that Dr. Smith's remarks, anent the six per cent rate, went to the crux of the issue, and that the industry was more disturbed because the six per cent barrier had been penetrated on the down side, than it was outraged because a new technique was being employed in the rate-making process.

Up to the end of 1943 the Commission had been allowing natural gas pipe line companies 6½ per cent by way of rate of return. Commencing in 1944 the rate of return regularly allowed was six per cent, and this much had been allowed as recently as April, 1952, in the Atlantic Seaboard case.[7a] Did the Northern and Colorado Interstate opinions,

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[7] Commissioner Smith was the author of the authoritative Fair Rate of Return in Public Utility Rate Making quoted from at length in Chap. IV.

[7a] F.P.C. Opinion No. 225, issued April 25, 1952, in the matter of Atlantic Seaboard Corp., Docket No. G-1175.

then, represent a further trimming of the standard rate ?

Trend of electric return downward. - It was a well known fact that rate of return allowances for companies in the electric light and power business had been and still were in a long-term downward trend. Numerous companies serving highly concentrated service areas were being required to get along on less than six per cent. There was the added fact, to which the natural gas business might have been giving special head at this juncture, that as recently as 1949 the Federal Power Commission had ruled that 5.25 per cent was an sufficient rate of return for Pennsylvania Water & Power Company, a well-entrenched electric generating company which wholesaled energy to distributors in Pennsylvania and Maryland.[8] Moreover this action by the Commission had been upheld in the United States Circuit Court of Appeals for the District of Columbia.[9]

A rear-guard action ? - Thus it could have been that the natural gas business, and investors too, seeing similar possibilities closing in on them, were mustering forces to fight a stiff rear-guard action against being similarly overtaken. As pointed out earlier it had not been too long ago that the "standard" rate of return for natural gas companies had been 6½ per cent. Then it had been cut to six per cent. Now, when the industry appeared to be on the threshhold of a

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[8] 8 F.P.C. 1, 76.

[9] 193 F2d, 230.

considerable period of expansion was no time to take a blow like this lying down.

Whether or not the Commission had done the business any permanent harm remained to be seen. Certainly those who expected its growth to be stunted were not right. Looking at the business from the point of view of 1956, it seems as vigorous as ever. A line is just now being completed to carry gas into the Pacific northwest. Its estimated cost is $150,000,000, and a good part of the money is being furnished by the Metropolitan Life Insurance Company !

Nor can it be said that natural gas company common stocks have failed to give a good account of themselves, marketwise. It is pertinent to note that Moody's average of ten natural gas transmission line company common stocks was 50 per cent higher at the end of 1956 than it was at the end of August, 1952, when the Northern Natural Gas opinion denouncement appeared in Standard & Poor's The Outlook. This compares with a 35 per cent gain in the Dow-Jones public utilities stock price average, between those dates.

Such facts do not, of course, prove that cost of capital is a proper measure of the fair rate of return for natural gas pipe line companies, although the results to date would not seem to indicate that there was anything particularly unfair about it. To arrive at a sound conclusion in this respect remains a principal objective of this study.

TABLE VII

RATES OF RETURN ALLOWED NATURAL GAS PIPE LINE COMPANIES

BY THE FEDERAL POWER COMMISSION PRIOR TO JULY 1952

Date	Name of Company	Opinion No.	Rate of Return Allowed
7-23-40	Natural Gas Pipeline Co. of America	49	6½ %
7-23-40	Texoma Natural Gas Company	49	6½ %
3- 8-42	Canadian River Gas Company	73	6½ %
5-26-42	Hope Natural Gas Company	76	6½ %
9-23-42	Panhandle Eastern Pipe Line Company	80	6½ %
4-16-43	United Gas Pipe Line Company	90	6½ %
7-28-43	Cities Service Gas Company	95	6½ %
9-21-43	Memphis Natural Gas Company	104	6½ %
9-22-44	Godfrey L. Cabot, Inc.	117	6 %
11- 9-45	Mississippi River Fuel Corp.	126	6 %
2-16-46	Penn-York Natural Gas Corp.	129	6 %
3-22-46	Montana-Dakota Utilities Co.	132	6 %
1-10-47	United Fuel Gas Company	145	6 %
7-22-47	Tennessee Gas Transmission Company	153	6 %
9- 2-48	Pittsburgh & West Virginia Gas Company	168	6 %
4-13-51	Ohio Fuel Gas Company	211	6 %
8-10-51	Hope Natural Gas Company	a	6 %
4-25-52	Atlantic Seaboard Corp.	225	6 %

a - Decision of a Presiding Examiner in F.P.C. Docket No. G-1292

PART III

CAPITAL AND CAPITAL COSTS

CHAPTER XII

CAPITAL AND CAPITAL ISSUES

This part of this study is to be devoted to the technical aspects of capital cost determination. However, since capital is a word of many meanings it seems worthwhile to devote some time to a consideration of this, and certain other related terms.

Economic capital. - Capital in the classical economic sense signifies the material things which are placed at the disposal of the managers of a business enterprise in order that they may pursue the objectives for which the enterprise was organized.

Considered in this light the economic capital of a natural gas pipe line company would be the gas wells, gathering systems, processing plants, transmission lines, compressor stations, metering and regulating stations, buildings, mechanical equipment and other accessories which the company needs in order to deliver gas to its customers. These things might also be called capital assets.

Business capital as a whole also includes certain funds, earlier called circulating capital, but now called working capital, which most business enterprises need in order to keep going while they are waiting for their customers to pay their bills.

Capital fund. - Of principal interest here is the concept of capital as a sum of money or fund placed at the disposal of the

directors of the enterprise to be spent by them for the purpose of purchasing or constructing such capital assets and other things which they need in order to pursue the purposes for which the business has been formed. As the day has long passed when an individual, or even a family, can put up the money necessary to launch an important enterprise of any description, more especially a long distance natural gas pipe line, such funds must necessarily be assembled from various sources. The manner of doing this will be explained presently.

In accordance with prevailing practices a portion of this capital fund will invariably have been contributed to it more or less permanently by those who have faith in its profit making possibilities. This is the entrepreneurial or stock capital, sometimes also called the risk capital.

Another portion of the capital fund will sometimes consist of funds which have been borrowed, on a long-term or short-term basis. This is called the debt capital.

Capital issues. - To symbolize their claims, and validate their interests, those who have loaned money to an enterprise, and those who have contributed its permanent or stock capital, are usually furnished with certain certificates or other documents. In the case of borrowed or debt capital the documents furnished will usually be called bonds, debentures or note. In the case of capital more or less permanently subscribed the documents issued will be called stock certificates.

Bonds, debentures and notes; preferred and common stocks are the securities most frequently issued. Sometimes there are others, devised to meet special circumstances or special demands. Sometimes they are convertible from one type into another. Debentures and preferred stocks which are convertible into common stock have a special appeal for certain classes of investors. A convertible feature is sometimes very useful in keeping borrowing costs down when money rates are high. In the post war financing of natural gas pipe lines frequent use was made of short term notes which were redeemable at maturity in preferred stock, at the issuing company's option. This was to get around certain provisions of The Natural Gas Act which forbade the payment of dividends out of capital account.[1]

In what Bonbright calls "the hierarchy of security issues" these capital issues rank among themselves according to the order in which their claims to an interest in the enterprise would be satisfied out of the corpus of the enterprise in the event that it was liquidated. This is the same thing as saying that they are classified according to risk.

Nature of securities. - Economists and authorities on investment matters generally accept the theory that the securities described above represent, to their owners, a series of expected returns plus, in some instances, the promise of the ultimate repayment of

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[1]Section 12 of the Act; 15 U.S.Code 717(k).

the sums advanced. In the case of bonds, debentures and notes the returns are called interest; in the case of stocks they are called dividends.

Debt capital. - The borrowed or debt capital of an enterprise is sometimes referred to as "hired" capital, a very descriptive term. It represents, in the main, capital funds which the directors believe they can use to advantage in furtherance of the ultimate objective of the business, which is to make profits. If the return being earned on the permanent capital of the business is nine per cent, and debt capital can be hired at four per cent, then profits may presumably be enhanced by the use of the additional capital funds. A very important point to be remembered is, however, that debt capital almost always has to be repaid.

Bonds, debentures and notes - From the issuing company's standpoint the debt instruments which it issues represent undertakings to pay interest at regular intervals (usually semi-annually) for the use or hire of the money, and to pay the principal amount borrowed at the due date, or over a period of time. Repayment over a period of time may be accomplished by a device known as a sinking fund into which money is paid at regular intervals, and which is applied by the trustee of the sinking fund to the purchase or redemption of outstanding securities.

Corporations will sometimes pledge their properties as security for such loans. By so doing they minimize the risk which the lender as-

assumes and, at the same time, secure their capital funds at a lower rate of interest. Money, like most commodities, has its price. Security of loans is one of its standards.

If a formal obligation is issued without pledge of properties, it may be called a debenture in American financial parlance. If the due date on an unsecured loan is less than about ten years it may be called a note, although there is no hard and fast rule about this. The foregoing refers to securities which are offered for sale to the public; the instrument betokening an obligation to a professional lender, like a bank, is almost always called a note.

In the case of debt securities the undertaking to pay interest and repay the principal is usually quite rigid. The issuing company may not fail to do the things it agrees to do without running numerous risks. A day's delay in meeting an interest coupon might be extremely harmful to the issuing company's investment credit. Persistent failure to meet obligations of this nature can lead to receivership, loss of properties or even bankruptcy.

Few managements could ride out such crises and still remain effective. For this reason they are usually reluctant to over extend their borrowings of capital without having an adequate cushion of permanent or equity capital. In the natural gas pipe line business a good practical rule is that borrowed capital should never exceed seventy-five per cent of the total permanent capital (short-term temporary borrowings excluded), and many of the more conservatively managed com-

panies strive to keep the debt ratio much lower. Some companies avoid debt capital entirely, but this is rare in the public utility business.

Entrepreneurial or stock capital - Stock capital as a class is often subdivided into preferred stock capital and common stock capital. The preferred stock capital is sometimes further subdivided as between first preferred stock and second preferred stock, but this seems to have gone out of practice in the public utility business. Technically both types of stock capital participate in the profits of the business but the participation of the preferred stock is usually limited to a specific dividend rate. Ordinarily it would not receive more out of the profits of the business even if they were of bonanza proportions.

In point of fact when everything is going well there is little discernible difference between the position of a preferred stockholder in a natural gas pipe line company, and a bondholder. Both require payments of specified sums at regular intervals. We are not here concerned with tax problems. The only time when preferred stock capital takes on different characteristics is when trouble impends. A company may defer or fail to make dividend payments on its preferred stock without suffering anything greater in the way of consequences than damage to its investment credit, insofar as this particular issue is concerned, something which it may take years to correct. As preferred stock dividends are usually cumulative, a payment deferred must

usually be made good before any dividends can be paid to the common stockholders. If several consecutive preferred dividends are not paid the common stockholders may be required to permit the preferred stockholders to participate in the management of the enterprise until the accumulated unpaid dividends have been made up. The consequences of non-payment of interest, as pointed out earlier, are considerably more serious.[2]

Common stocks. - In the case of common stocks the obligation to pay dividends is quite elastic; in fact there is no obligation at all. There are, for example, many common stocks outstanding today on which no dividends have ever been paid, and probably never will. Common stockholders, however, possess one inherent right, and that is to manage the business. This is the same as saying that the interests of the common stockholders and the management are identical. Returning, then, to the fundamental precept that the purpose of business is profits, it follows that any management which, after a certain period of time, fails to produce profits is likely to be ousted; it likewise follows that any management meaning, in this instance, any board of directors which fails to pay dividends out of well sustained, legitimate profits, likewise faces criticism by its stockholders.

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[2]The author is pleased to be able to record that defaults in the payment of interest or principal, and postponement of preferred dividend payments have been extremely rare in the natural gas pipe line business.

Repayment of equity capital. - Participating capital of the common share class is seldom, if ever, repayable unless the enterprise is liquidated.[3] It is not unusual for participating capital in the preferred stock class to be repaid, either through redemption, or over a period of time by a sinking fund or retirement fund. In fact, in the natural gas pipe line business, provisions for the redemption of preferred stocks over a twenty-five or thirty year period are frequently noted.

Equity. - Equity is a word which is sometimes used to describe all of the participating capital of a corporation, including preferred and common stock. At other times it is used to describe only the common share capital, including earned and paid-in surpluses. Where used in this study, henceforth, it will have the latter significance unless otherwise noted.

Assets and liabilities. - Accountancy differentiates between material capital and working capital, on the one hand, and the claims representing capital funds on the other, by designating the first mentioned type of capital as capital assets, and the other as capital liabilities.

The "original cost" doctrine of public utility accounting assumes an equivalency between capital assets and capital liabilities,

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[3]Recognition is given to the fact that certain companies engaged in extractive industries, such as mining and oil and gas production have been able to have portions of their annual dividends declared to be a "return of capital" for tax purposes.

an assumption which supports the postulate that the cost of capital funds, or money capital, is directly related to the question of fair return on economic capital.

Capitalization. - Capitalization is a financial or fiscal term. One accounting authority says it "consists of the legal and economic relationships among and between the corporation and the persons who have supplied its investment capital."

From a practical standpoint capitalization embraces the sum total of the book values of all the securities which the corporation has outstanding, including in the book value of the common stock all stock premiums; capital, paid-in and earned surpluses.

Short-term debt is not usually regarded as a part of the capitalization unless it obviously represents permanent capital; that is to say, funds which have been converted into permanent capital assets.

Investment credit. - During the course of this discussion reference has been made, on occasion, to investment credit. This is a somewhat nebulous, but very important factor which represents a company's ability to raise capital funds by selling its securities. It is the measure of the issuing company's character, integrity and trustworthiness in the financial world. It is something which every company which must obtain its capital funds from the public guards as carefully as an honest man guards his personal reputation. Good investment credit is valuable at all times, but it is especially valuable in times of stress.

It is axiomatic in the business world that well managed corporations will make every effort to meet their obligations, including interest and sinking fund payments on their debt securities, and dividend payments and other requirements relating to their preferred stocks. It is unfortunately true that not all of them are able to do these things at all times. Experience has shown that corporations can and do fail to pay interest on their bonds and debentures, and sometimes cannot meet payments on the principal when due. Preferred dividends have often been left unpaid for long periods of time. Such defaults occur with distressing frequency during "hard times." Ability to live through such periods without untoward financial incidents is one mark of a well founded enterprise. Happily it can be stated that most natural gas pipe line companies presently seem to be in this category, but it is also necessary to observe that several of the very largest have not, as yet, been exposed to this test.

A free market. - It seems important to emphasize again, what has already been stated, that the possessors of savings are under no obligation to commit them to any particular form of enterprise. It is true that some institutions and individuals prefer securities to other forms of investment, but generally speaking the market is free and the saver has a wide range of choice. A good reputation with investors is therefore of importance to enterprises which must frequently draw on the capital market.

CHAPTER XIII

THE PROCUREMENT OF CAPITAL FUNDS

According to generally accepted concepts the principal sources upon which entrepreneurs may rely for funds with which to finance capital expansion are business and personal savings. Business savings consist largely of sums set aside out of income for the retirement or replacement of capital assets, sometimes called depreciation and depletion accruals; and retained earnings, that is to say, profits not distributed to stockholders in the form of dividends. Personal savings are the sums which individuals set aside out of their income for various purposes and which reappear in the form of bank deposits, premiums paid to insurance companies, repayments of mortgage loans, investments in stocks and bonds, contributions to retirement funds and so on.

When a business is growing, as has been the case with natural gas pipe line companies since the end of World War II, its own savings will seldom, if ever, suffice for its capital needs. Accordingly, it is then necessary for that business to draw upon the savings of others in order to meet its capital requirements. This it does by issuing securities and selling them.

The capital market. - The economic region in which securities are exchanged for savings is called the capital market or, more narrowly, the securities market. The symbol of this market is Wall Street; nevertheless the market is nation-wide. It is a market which is maintained

by hundreds of securities dealers, brokers and underwriters. It reaches into every community within reach of telephonic, telegraphic or postal communications. It is a free market and an extraordinarily sensitive one. Under ordinary circumstances its ability to absorb securities, i.e., exchange them for savings, is good.

Demand for capital funds. - Such has been the growth of the natural gas business during the past decade that it has been forced to draw heavily upon the savings of others in order to procure the necessary capital funds. Over this period natural gas companies as a group have issued and sold more than $6 billion of securities. Most of this has been new and additional capital; very little of it has been employed for refunding. More than half the funds raised have gone into pipe line construction. Table VIII, below, shows the volume of securities placed on the market by the principal divisions of the industry.

TABLE VIII

SECURITIES SOLD BY NATURAL GAS COMPANIES 1946 - 1955

(millions of dollars)

Division of the industry	Bonds, debentures and notes	Preferred stock	Common stock	Total
Pipe line companies	3,016	384	303	3,703
Distribution companies	1,024	110	131	1,265
Holding companies	937	-	321	1,258
Total	3,977	494	755	6,226

Natural gas companies have not, of course, been the only enterprises offering securities for sale in the capital markets during this decade. Several times $6 billion of new securities have been offered for sale by railroad companies, electric companies, telephone companies and industrial concerns, to say nothing of state, town and city financing and United States government offerings. In short, whatever sums the natural gas companies have taken out have been secured in competition with others seeking the available savings.

Methods of Selling Securities

Negotiated sale. - For a long period of time, prior to the Great Depression, the traditional method of selling securities to raise capital funds was for the issuing company to call in certain security merchants, variously called investment bankers or underwriters and to negotiate with them concerning the terms and conditions of the offering. It not infrequently happened that the underwriter summoned was one with which the issuing company had had previous dealings; it might be that it was a firm which had acted as financial adviser to the issuing company over a period of time. It might be a firm which had a director or two on the board of the issuing company.

When the terms and conditions were decided upon, the issue was customarily sold, en bloc, to the favored underwriter and others

who became associated with him for the particular purpose of taking up the issue. The syndicate, as this underwriting group was sometimes called, then proceeded to distribute the issue through its members' selling organizations and their associated dealers.

This method of selling securities came in for considerable criticism following the market collapse of 1929-32. In the reform period which followed it was frowned upon for companies having public responsibilities, such as public utility companies and railroads. It is still followed by some industries and companies, including a few natural gas pipe line companies to whom it is not prohibited.

Competitive bidding. - One alternative to negotiated sale is sale by competitive bidding. States, counties and municipalities have used this method of selling their securities for a long period of years, and it is now prescribed for railroads subject to the jurisdiction of the Interstate Commerce Commission, for public utility companies subject to the jurisdiction of the Securities and Exchange Commission, under the Public Utility Holding Company Act, and for public utilities generally in about half the states.

Under competitive bidding the issuing company makes ready its issue, leaving such details as the interest or dividend rate, and call prices to be determined at the time of the bidding. The security is registered with the Securities and Exchange Commission and the issuing company advertises for bids, to be opened at a specified place at a given time and date. Preliminary copies of the registration statement

and bidding papers are furnished interested bidders. A briefing session is held at which questions are answered and additional information furnished concerning the security about to be offered.

At an assigned date and time the bids are opened and the offers analyzed to determine which is the most advantageous one from the issuing company's point of view. The award is made, a contract closed and shortly thereafter the issuing company receives its money. The offering will usually be offered for sale as soon as possible after the closing.

If the underwriters have gauged the market correctly thay may sell the issue within a few hours. If not, and the issue is "sticky" it may "stay on the shelf" for a number of days, during which the original public offering price will be maintained. When the syndicate "breaks up" any portion of the issue which remains unsold may be offered for sale for whatever price the underwriter or dealer thinks he can get for it. This may entail a loss.

The particular virtue of competitive bidding is that it supposedly secures the highest obtainable price to the issuer. A collateral feature is that it gives officials of the issuing company a sort of automatic absolution from any suspicion of evil doing, such as consorting with investment bankers. Public utility officials, particularly, have been extremely sensitive to such charges since New Deal days. It sometimes works to the disadvantage of smaller and less well known utilities whose offerings may not attract the interest of the underwriters best able to distribute the issue.

Private placement. - Another alternative to negotiated sales of securities is a sale by private placement. Under this method the issuing company sells its securities directly to one or more purchasers who buy for investment purposes, and not for resale. The transaction is often consummated without benefit of middlemen, such as underwriters, brokers or dealers. Sometimes, however, an underwriter may arrange the sale, for which he may be paid a fee.

The principal purchasers of securities at private placement have been the so-called "institutional" investor. Among these are life insurance companies, fire and casualty companies, trustees of pension funds, educational and charitable foundations and benevolent and fraternal orders. Of all these the life insurance companies have been, by far, the most important group.

Private placement is said to have been inspired by the desire of many companies to avoid the inconvenience and expense of registering their offerings with the Securities and Exchange Commission. Another reason was the realization by the life insurance companies that since they were the ultimate buyers of senior securities anyway, and that the middleman's profit could thus be eliminated or reduced with profit to both buyer and seller. Finally there is the fact that in recent years the insurance companies have been under tremendous pressure to find profitable employment for the millions of dollars in premiums flowing into their treasuries.

In 1954, for example, the life insurance companies alone bought more than $2.7 billion of corporate securities, and at the end of that year held securities of business and industry totaling $37 billion.

Private placements by natural gas companies. - More than forty-five per cent of all the senior securities sold since the end of World War II by all natural gas companies, and considerably more than half the bonds sold during that period by the pipe line companies were private placements. (See Table 8 on the following page) It has not been uncommon for one insurance company to take an entire issue, although it is far more common for them to divide up an offering among six to a dozen companies.[1] There are several natural gas pipe line companies none of the senior securities of which have ever been offered for sale publicly. [2]

Importance of private placements to the pipe line business. - Though Wall Street, and the financial community generally, looks with disfavor upon private placements, few will deny that the natural gas pipe line business could not have made the progress which it has, during the past decade had this method of obtaining capital funds not been available. This is because the procedures of investment banking are

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[1]The largest single transaction which has come to the author's attention was the purchase in 1952 by The Prudential Insurance Company of America of a $110,000,000 promissory note of Lone Star Gas Company.

[2]Among them are: El Paso Natural Gas Co., Lone Star Gas Co., Mississippi River Fuel Corp., Texas Gas Transmission Corp. and Transcontinental Gas Pipe Line Co.

TABLE IX

NATURAL GAS BONDS SOLD THROUGH PUBLIC OFFERINGS AND PRIVATE PLACEMENTS

1946 - 1955

Type of Company	Method of Sale	Amount Sold	Per cent of Total
		$(000,000)	
Pipe line	Public	1,190	23.9
Pipe line	Private	1,819	36.3
Distribution	Public	626	12.5
Distribution	Private	424	8.5
Integrated	Public	821	16.5
Integrated	Private	117	2.3
Total		4,997	100.0

Note - the integrated companies included in the above summary are those which combine production, transmission and distribution functions under holding company control.

not adapted to the flotation of construction loans of the size required in the pipe line business. To appreciate this it is merely necessary to note that most of these lines have required one to two years to build, that construction is costly, and that no gas can move through a line and be sold, until it is complete, from be-

ginning to end.[3] In the absence of earnings, or prospect of earnings during the construction period, it has been necessary for those financing the undertaking to appraise the investment risks on the basis of engineering studies, accounting forecasts, confidence in the promoters and general experience with similar undertakings. Few but the large insurance companies have been equipped to do this, and advance the money, on the scale required. Consequently it is difficult to perceive how the pipe line business could have gotten under way without their cooperation and financial support.

Equity capital procurement. - Because it represents the proprietary interest special procedures govern the procurement of equity capital. In many jurisdictions companies seeking to raise this class of capital are required to offer the new shares first to existing stockholders. This give rise to the familiar practice whereby common stockholders are offered the right to subscribe to their proportionate share of a new offering at prices somewhat below the market price. The subscription price is usually set so that the "rights" have a nominal value and may be sold by those stockholders who do not wish to add further to their holdings.

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[3]The 30-inch pipeline completed by Gulf Interstate Gas Company in 1954 is carried on that company's books at $128,000,000 original cost. It is about 860 miles long, indicating a cost of about $148,000 per mile. The estimated cost of the 1,466-mile pipe line being constructed by Pacific Northwest Pipeline Corp. was $118,850,000 or about $81,000 per mile. By the time it is completed it probably will have averaged about $100,000 per mile.

As Table X, on the following page, indicates, approximately $166,000,000 of equity capital was raised by natural gas pipe line companies through rights offerings during the period from 1946 down to the end of 1955. In addition to this, virtually all the $321,-000,000 of equity capital procured by the integrated holding company systems was raised in this way. (See Table VIII, page 142)

By contrast only about $86,000,000 of pipeline company equity capital was raised through direct public offerings of common shares up to the end of 1955, and about $80,000,000, or almost all of this, was raised by one unit, namely Tennessee Gas Transmission Company. (See Table XI, on the second page hereunder)

While there have been other public offerings of the stocks of natural gas pipe line companies, as this latter Table indicates, they have not been capital raising issues for the account of the companies involved.

Private placements of the common stocks of natural gas pipe line companies are rare. Many of the life insurance companies are prohibited from purchase common shares of any type, while some others avoid doing so as a matter of policy.

Preferred stock. Preferred shares are sometimes placed privately, if a buyer can be found. More often than not, however, they are offered for sale publicly, and most of the $384,000,000 of preferred shares, shown in Table VIII to have been sold by pipe line companies during the decade covered, were marketed in this way.

TABLE X

PRINCIPAL PUBLIC OFFERINGS OF NATURAL GAS COMPANY COMMON STOCKS 9

1946 TO DATE

No.	Common Stock Of	Approximate Offering Date	No. of Shares Offered	Size of Offering (000)	Per Share: Price to Public	Per Share: Price to Underwriter	Per Share: Expenses	Per Share: Net Proceeds	Latest available earnings: 12 Mos. to	Latest available earnings: Per Share	Ratio of earnings to: Price to Public	Ratio of earnings to: Price to Underwriters	Ratio of earnings to: Net Proceeds
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
					I. Pipe line companies								
PL-1	Tennessee Gas Trans. Co.	Jan. 1946	812,100 1/	$ 9,745	$12.00	$11.10	$0.09	$11.01	Nov. '45	$2.07	17.3%	18.6%	18.8%
PL-2	Tennessee Gas Trans. Co.	Apr. 1946	484,444 2/	9,568	19.75	18.65	.03 3/	18.62	Dec. '45	2.46	12.5	13.2	13.2
PL-3	Texas Eastern Trans. Corp.	Nov. 1947	3,550,000 4/	33,725	9.50	8.50	.05	8.45	5/	5/	-	-	-
PL-4	Northern Natural Gas Co.	Dec. 1947	710,500 6/	19,183	27.00	25.80	.10	25.70	Sept. '47	3.43	12.7	13.3	13.3
PL-5	Tennessee Gas Trans. Co.	Sept. 1948	400,000	12,100	30.25	28.60	.19	28.41	Dec. '47	2.40	7.9	8.4	8.4
PL-6	Miss. River Fuel Corp.	Jan. 1949	144,200 7/	4,326	30.00	28.00	.49	27.51	Dec. '47	2.46	8.2	8.8	8.9
PL-7	Miss. River Fuel Corp.	Apr. 1949	435,282 8/	13,058	30.00	8/	8/	8/	Dec. '48	3.49	11.6	-	-
PL-8	Texas Gas Trans. Corp.	Aug. 1949	218,625 7/	2,624	12.00	11.10	.18	10.92	May '49	0.75	6.3	6.8	6.9
PL-9	Tennessee Gas Trans. Co.	Sept. 1949	400,000	12,100	30.25	28.80	.12	28.68	July '49	2.24	7.4	7.8	7.8
PL-10	Texas Gas Trans. Corp.	Mar. 1950	193,306 7/	3,528	18.25	17.13	.41	16.72	Dec. '49	0.81	4.4	4.7	4.8
PL-11	Tennessee Gas Trans. Co.	Oct. 1950	250,000 9/	7,500	30.00	28.55	.24 9/	28.31	Aug. '50	1.84	6.1	6.4	6.5
PL-12	Tennessee Gas Trans. Co.	Apr. 1951	400,000	9,600	24.00	22.75	.11	22.64	Dec. '50	1.73	7.2	7.6	7.6
PL-13	Colorado Interstate Gas Co.	Apr. 1952	966,000 7/	25,841	26.75	25.75	n.a.	-	Dec. '51	1.88	7.0	7.3	-
PL-14	Tennessee Gas Trans. Co.	May 1952	250,000	7,375	29.50	28.10	.12	27.98	Mar. '52	1.73	5.9	6.2	6.2
PL-15	Texas Gas Trans. Corp.	Aug. 1952	350,000	6,081	17.38	16.48	.13	16.35	June '52	1.49	8.6	9.0	9.1
PL-16	Tennessee Gas Trans. Co.	May 1953	1,000,000	22,750	22.75	21.25	.06	21.19	Feb. '53	1.86	8.2	8.8	8.8
PL-17	Texas Gas Trans. Corp.	Mar. 1954	200,000 7/	3,450	17.25	16.35	.17	16.18	Dec. '53	1.59	9.2	9.7	9.8
PL-18	Tennessee Gas Trans. Co.	Sept. 1955	400,000	16,550	41.375	39.475	N.A.	-	June '55	2.01	4.9	5.1	-
PL-19	Colorado Interstate Gas Co.	Nov. 1955	256,503 7/	14,729	57.50	55.50	N.A.	-	Aug. '55	3.85	6.7	6.9	-

Footnotes to Part I

n.a. Not available

1/ Of which 238,000 represented a sale by the issuing company, and 574,100 shares represented a disposition by certain stockholders.

2/ Of which 134,444 shares did not represent new financing.

3/ Company's Annual Report to the F.P.C. (Form 2) for the year 1946 shows Common stock expense for the year as $31,382; SEC report shows expense applicable to the stock issued during January 1946 (No. PL-1, above) as $21,420, leaving expenses applicable to this offering $10,412 or $0.03 a share.

4/ The total offering was 3,564,000 shares of which 3,550,000 shares represented an offering in behalf of the issuing company.

5/ Company had been operating less than a year when this stock was offered so earnings on a 12 months basis were not available.

6/ Represents a disposition by North American Light & Power Co.

7/ Represents a disposition by certain stockholders; does not represent financing by the issuing company.

8/ Represents, as to 305,688 shares, a disposition by United Gas Corp. and as to 129,594 shares, a disposition by underwriters of stock which they had acquired by exercising rights which they had purchased from United Gas Corp. The rights offering, which preceded this public offering, consisted of 327,610 shares which had been offered to stockholders of record April 12, 1949 on a 1-for-2 basis at $27.25 per share. The Company's Annual Report to the F.P.C. (Form 2) for the year 1949 shows $111,971 or $0.34 a share as the cost of issuing this stock.

9/ Offered at the same time as 100,000 shares of 4.64% Preferred stock; expenses includes $60,000 relating to both issues as no breakdown of this item as between Preferred and Common stock was available.

TABLE XI

PRINCIPAL PUBLIC OFFERINGS OF NATURAL GAS COMPANY COMMON STOCKS

1946 TO DATE

9

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	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
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PL-4	Northern Natural Gas Co.	Dec. 1947	710,500 6/	19,183	27.00	25.80	.10	25.70	Sept. '47	3.43	12.7	13.3	13.3
PL-5	Tennessee Gas Trans. Co.	Sept. 1948	400,000	12,100	30.25	28.60	.19	28.41	Dec. '47	2.40	7.9	8.4	8.4
PL-6	Miss. River Fuel Corp.	Jan. 1949	144,200 7/	4,326	30.00	28.00	.49	27.51	Dec. '47	2.46	8.2	8.8	8.9
PL-7	Miss. River Fuel Corp.	Apr. 1949	435,282 8/	13,058	30.00	8/	8/	8/	Dec. '48	3.49	11.6	-	-
PL-8	Texas Gas Trans. Corp.	Aug. 1949	218,625 7/	2,624	12.00	11.10	.18	10.92	May '49	0.75	6.3	6.8	6.9
PL-9	Tennessee Gas Trans. Co.	Sept. 1949	400,000	12,100	30.25	28.80	.12	28.68	July '49	2.24	7.4	7.8	7.8
PL-10	Texas Gas Trans. Corp.	Mar. 1950	193,306 7/	3,528	18.25	17.13	.41	16.72	Dec. '49	0.81	4.4	4.7	4.8
PL-11	Tennessee Gas Trans. Co.	Oct. 1950	250,000 9/	7,500	30.00	28.55	.24 9/	28.31	Aug. '50	1.84	6.1	6.4	6.5
PL-12	Tennessee Gas Trans. Co.	Apr. 1951	400,000	9,600	24.00	22.75	.11	22.64	Dec. '50	1.73	7.2	7.6	7.6
PL-13	Colorado Interstate Gas Co.	Apr. 1952	966,000 7/	25,841	26.75	25.75	n.a.	-	Dec. '51	1.88	7.0	7.3	-
PL-14	Tennessee Gas Trans. Co.	May 1952	250,000	7,375	29.50	28.10	.12	27.98	Mar. '52	1.73	5.9	6.2	6.2
PL-15	Texas Gas Trans. Corp.	Aug. 1952	350,000	6,081	17.38	16.48	.13	16.35	June '52	1.49	8.6	9.0	9.1
PL-16	Tennessee Gas Trans. Co.	May 1953	1,000,000	22,750	22.75	21.25	.06	21.19	Feb. '53	1.86	8.2	8.8	8.8
PL-17	Texas Gas Trans. Corp.	Mar. 1954	200,000 7/	3,450	17.25	16.35	.17	16.18	Dec. '53	1.59	9.2	9.7	9.8
PL-18	Tennessee Gas Trans. Co.	Sept. 1955	400,000	16,550	41.375	39.475	N.A.	-	June '55	2.01	4.9	5.1	-
PL-19	Colorado Interstate Gas Co.	Nov. 1955	256,503 7/	14,729	57.50	55.50	N.A.	-	Aug. '55	3.85	6.7	6.9	-

Footnotes to Part I

n.a. Not available

1/ Of which 238,000 represented a sale by the issuing company, and 574,100 shares represented a disposition by certain stockholders.

2/ Of which 134,444 shares did not represent new financing.

3/ Company's Annual Report to the F.P.C. (Form 2) for the year 1946 shows Common stock expense for the year as $31,382; SEC report shows expense applicable to the stock issued during January 1946 (No. PL-1, above) as $21,420, leaving expenses applicable to this offering $10,412 or $0.03 a share.

4/ The total offering was 3,564,000 shares of which 3,550,000 shares represented an offering in behalf of the issuing company.

5/ Company had been operating less than a year when this stock was offered so earnings on a 12 months basis were not available.

6/ Represents a disposition by North American Light & Power Co.

7/ Represents a disposition by certain stockholders; does not represent financing by the issuing company.

8/ Represents, as to 305,688 shares, a disposition by United Gas Corp. and as to 129,594 shares, a disposition by underwriters of stock which they had acquired by exercising rights which they had purchased from United Gas Corp. The rights offering, which preceded this public offering, consisted of 327,610 shares which had been offered to stockholders of record April 12, 1949 on a 1-for-2 basis at $27.25 per share. The Company's Annual Report to the F.P.C. (Form 2) for the year 1949 shows $111,971 or $0.34 a share as the cost of issuing this stock.

9/ Offered at the same time as 100,000 shares of 4.64% Preferred stock; expenses includes $60,000 relating to both issues as no breakdown of this item as between Preferred and Common stock was available.

Preferred stocks can usually be purchased on a yield basis one half to one per cent higher than that afforded by the next senior debt capital issue of the same company. For this reason, principally, they have a distinct appeal to investors in the "widow and orphan" category, who live wholly or partially on the return from invested funds. For somewhat similar reasons they are also of interest to various minor institutional investors, such as universities and colleges, fire and casualty insurance companies, pension funds and fraternal orders. Such purchasers are usually best reached through public offerings.

Preferred stock financing is often undertaken for the purpose of giving better balance to a company's financial structure. It provides an additional means of "trading on the equity" without running up the debt.[4]

Convertible preferred stocks. Convertible preferred stocks are sometimes employed as an indirect means of raising equity capital. The sale of such shares is often governed by the rule which requires that all additional common stock, or securities convertible into common stock, be offered first to existing stockholders, via rights.

The notes payable in preferred stock, which some pipe line companies have issued to see themselves through the construction

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[4]"Trading on the equity" is a financial expression meaning employment of senior capital funds at a rate of return higher than their cost in order to increase the profits of the residual share owners. See H.G.Guthmann and H.E.Dougall, Corporate Financial Policy (New York: Prentice-Hall,Inc.) 2d ed. c. 1948; pp. 99-101.

period, have usually been sold privately.

Favorable conditions. - Generally speaking, the natural gas business, and the pipe line business particularly, have been especially fortunate as regards their capital procurement programs. This is because their major expansion has taken place during a period in which public utility securities generally have been in high favor with all types of investors, more importantly the life insurance companies which are the trustees of the bulk of personal savings.

During this period the natural gas companies have also been benefitted by the excellent investment credit already established by allied public utility enterprises, more particularly the electric light and power companies. The excellent credit standing achieved by the natural gas companies which came into existence during the late 1920s and the early 1930s has also helpted the late comers with their financing.

The natural gas pipe line companies have also been fortunate, in that they have been able to offer investors of a speculative frame of mind, such as prefer common stocks to bonds, an opportunity to participate in a dynamically growing industry, not all of which was subject to regulatory control. The ultimate test of the industry's stamina awaits, of course, the next depression. It is the author's prediction that it will weather it well,and in such a way as to indicate that investor confidence in the business, as indicated by heavy purchases of its securities, has not been misplaced.

CHAPTER XIV

THE COST OF CAPITAL FORMULA

The Cost of Capital formula, which has been referred to many times in these pages, represents a sort of statistical procedure for obtaining the weighted average cost of the capital employed by an enterprise. This is accomplished, as will presently be shown, by determining the weighted average cost of each type of capital employed by the enterprise, and combining them all in the manner shown by the formula. There is nothing mysterious or sinister about it.

Type of capital. - By type of capital is meant debt capital, preferred stock capital and common stock capital, the latter to include premiums and surplus. Occasionally the capital structure of a public utility will include other types of capital, often hybrids, such as the short term notes convertible into preferred stock, or debentures convertible into common, mentioned in Chapter XII. The classification of such issues for formula purposes is usually a matter of judgement. Short-term debt, such as bank loans due within less than a year, or bonds and debentures maturing within a year, is not usually considered a part of the permanent debt capital.

Cost. - It will suffice for the moment to describe the cost of capital, which is what we are seeking, as the interest rate, using this term in its broad sense. More specifically, cost may be de-

scribed as the interest rate agreed to be paid on debt securities, and the dividend rate agreed to be paid on preferred stocks. In the case of common stock the cost of capital has a somewhat different significance. All will be discussed in greater detail in subsequent chapters dealing with the determination of the costs of these various classes of capital. For the present it is necessary to assume that the costs have been determined; what is to be shown here is how to put them to-gether so as to bring forth the over-all cost of capital.

The formula. - The working form of the cost of capital formula is shown in Figure 3 on the following page. For the purpose of deriving the formula in abstract form, or "filling in" this working form let:

Long-term debt capital be represented by . . . D

Preferred stock capital be represented by . . P

Common stock capital, including surplus,

be represented by . . . . . E

Total capital be represented by . . . . . K

It is assumed for the purposes of this calculation that

$$D + P + E = K$$

If additional types of capital were involved they would be represented among the foregoing by an appropriately chosen letter.

The next step in the development or explanation of the formula is to assign symbols to represent the ratio which each type of

Class of Capital	Amount of Capital	Portion of Total Capitalization	Cost Rate	
			of this class of Capital	of this portion of Capitalization
Debt	D	d	x	d x
Preferred stock	P	p	y	p y
Common equity	E	e	z	e z
TOTAL	K	1		r
r = Overall Cost of Capital				

FIG. 3 COST OF CAPITAL FORMULA

capital bears to the total capitalization, K. Accordingly, let:

D/K, or the ratio of debt capital to total capitalization, be represented by . . . . . d

P/K, or the ratio of preferred stock capital to total capitalization, be represented by . . . . . p

E/K, or the ratio of common stock and surplus, i.e., the common equity, be represented by . . . . e

If D + P + E = K, then d + p + e = unity, or 1.

The final step in the development of the cost of capital formula is to assign symbols to represent the cost rate of each type of capital. For these purposes let:

the weighted average cost of debt capital (D) be represented by x

the weighted average cost of preferred stock capital (P) be represented by . . . . . y

the "cost" of common equity capital (E) be represented by . . . . . z

The foregoing quantities having been determined, numerically, according to the particular problem in hand, the weighted average cost of debt capital, to which the symbol "r" may be assigned, will be the result of combining them according to the pattern or formula shown in Figure 3 on the preceding page.

In developing data for application in accordance with this procedure items falling under "amount of Capital" would be expressed in dollars (for use in the United States and Canada); items falling under "Portion of Total Capitalization" would preferably be expressed in decimal fractions, to avoid confusion with data to be inserted under "Cost Rate," and items falling under the last named headings should be stated in percentage terms. The resultant "r" will thus be a percentage, also.

Example. - An excellent example of the application of this formula to the solution of a problem in cost of capital determina-

Class of Capital	Amount of Capital	Portion of Total Capitalization	Cost Rate	
			of this class of Capital	of this portion of Capitalization
	$ (000)		%	%
Debt	63,240	.554	3.68	2.03
Preferred stock	15,000	.131	5.50	0.72
Common equity	35,927	.315	10.30	3.25
TOTAL	114,167	1.000		6.00
OVERALL COST OF CAPITAL = 6.00%				

FIG. 4 EXAMPLE OF COST OF CAPITAL CALCULATION

From Federal Power Commission Opinion No. 275, issued July 30, 1954 In the matter of Michigan-Wisconsin Pipe Line Company (p. 24, fn. 5).

nation is to be found in Federal Power Commission Opinion No. 275, issued July 30, 1954 in the matter of Michigan-Wisconsin Pipe Line Company. This is shown in Figure 4, above.

As will presently be demonstrated, a calculation such as this one has been in the background of nearly every important rate of return ruling of the Commission since mid-1952, when the Northern, Mississippi River Fuel and Colorado Interstate opinions appeared.

The techniques for determining the cost rate components, "x," "y" and "z", for the several classes of capital, will be discussed in the next three chapters.

CHAPTER XV

DETERMINATION OF THE COST OF DEBT CAPITAL AND PREFERRED STOCK CAPITAL

Before endeavoring to arrive at a figure to represent the cost of debt capital (x) in the cost of capital formula developed in Chapter XIV, or a figure to represent the cost of preferred stock capital (y) in that formula, it is necessary to decide whether the rate sought is to be the historic cost of those types of capital, or whether it is to be some other figure, such as current or replacement cost.

Historic cost, sometimes also called experienced cost, means the contract cost of capital already obtained. Thus if an applicant has $25,000,000 of debt capital, which it had procured by selling bonds on such a basis that the ration of annual interest charges to net proceeds was 3.75 per cent, this 3.75 per cent would be the historic or experienced cost of this portion of total capital, regardless of what it might cost to raise that much capital some other time.

Current cost, by contrast, means what it would cost as of to-day for the same company to raise a limited amount, say $15,000,000, of debt capital. The cost rate might be more or less than the 3.75 per cent cost rate experienced when the $25,000,000 was raised.

Replacement cost means the probable cost to a company, in terms of the effective interest rate, to replace all the outstanding

debt capital, or preferred stock capital, as the case might be. Thus a company needing, say $10,000,000 of additional debt capital, might find the security markets so receptive to an offering that it would repay the company to retire all its outstanding debt securities, or all debt securities of a particular class. The effective interest rate obtained through such a wholesale refunding operation would be the replacement cost rate.

An important difference between historic or experienced cost on the one hand, and current or replacement cost on the other, is that historic cost can usually be determined with a high degree of accuracy from the books and records of the issuing company, whereas current or replacement cost inevitably remains a matter of some conjecture until the new or refunding issue is placed on sale. In short, it is a matter of fact or fancy, and conservative regulatory practice usually gives greater consideration to readily ascertainable facts; that is to say, to historic costs of debt capital and preferred stock capital. This practice is consistent with the original cost doctrine. Exceptions are somtimes made in cases where additional financing is imminent and it is possible to estimate the probable net cost of the additional capital closely.

Data furnished. - The data necessary for the ascertainment of historic cost is not complicated, and companies seeking rate increases from the Federal Power Commission are required to furnish it with their applications.

Cost of Debt Capital

The information essential to the determination of the historic cost of debt capital ("r" in the cost of capital formula, page 157) is as follows:

1. The nominal interest rate, sometimes called the coupon rate;

2. the term of the issue; that is to say, the number of years from the issue date to the maturity date;

3. the exact net proceeds realized by the issuing company from the sale of the issue in question; and

4. other circumstances tending to advance the redemption date, or increase the redemption price.

Nominal interest rate and term. - The nominal interest rate, or the coupon rate, as it is sometimes called, are usually evident in the title of the issue as, for example: Northern Natural Gas Company Sinking Fund Debentures, 3¼%, dated July 14,1954; due December 1, 1974.

Exact net proceeds. - By "exact net proceeds" is meant the sum realized by the issuing company from the sale of the issue to the underwriters, or other purchasers, after the deduction of all expenses relating to the issuance of the security in question.

Note that it is not the price at which the issue is offered to the public, if there is a public sale. This would be the public offering price.

The public offering price, less what is called the underwriter's spread, determines the underwriter's price. This is what the underwriter pays the issuing company for the security. The spread is the underwriter's gross profit on the transaction. Out of it he must pay his own expenses, commissions to his salesmen and so forth. If he sells to a dealer he will do so at some concession or discount from the public offering price, which concession will normally amount to a fraction of the spread.

The underwriter's price is not the net proceeds, insofar as the issuing company is concerned. From what it receives from the underwriter the issuing company must deduct its own expenses in connection with the issue. These may include legal and accounting fees, trustee's fees, new issue taxes, registration fees (if the security must be registered with the Securities and Exchange Commission), and printing and engraving costs. Only after all these items have been ascertained and deducted can the net proceeds be determined. All this may be summed up as follows:

Public Offering Price - Underwriter's Spread =

Underwriter's Price

Underwriter's Price - Issuing Company's Expenses =

Net Proceeds.

If the issue is sold directly to the ultimate investor, which is what takes place in private sales, there will be no underwriter's spread. However, if an underwriter or dealer is paid a

fee for assisting in the placement of the issue, that fee will become one of the issuing company's expenses.

An estimate of the issue expense is usually provided in the offering prospectus, if there is one, but the actual expenses, associated with an offering very often cannot be determined until many months after it is sold. In the case of natural gas pipe line companies (and electric utilities) reporting to the Federal Power Commission, it will eventually appear in the detailed annual reports which these companies file with that Commission.

Historic cost of debt capital. - The information essential to the determination of the historic cost of debt capital having been ascertained, and reduced to a percentage of the principal amount, or par value, of the security in question, the desired factor may then be ascertained by reference to a standard table of bond values, sometimes known as the "amortized yield tables."[1] The latter is a reference to the fact that these tables have been calculated on the theory that the discount or premiums resulting from the sale of redeemable securities at values below or above par, is to be amortized over the term of the issue.

In general the historic cost so determined will be greater than the nominal interest rate, or coupon rate, when the net proceeds

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[1]As, for example: Comprehensive Bond Value Tables, published in various forms by Financial Publishing Company, Boston.

have been less than the principal amount, or par, and less than the coupon rate when the issuing company has netted a premium above par from the sale.

Sinking funds. - The principal device tending to advance the maturity date of an issue, or increase its redemption price, is the sinking fund of the type which commences operations during the early life of the issue, and is scaled so as to retire a substantial portion thereof prior to maturity, at a premium.

Such sinking funds are frequently a feature of natural gas pipe line issues. They serve the purpose of keeping the debt more or less abreast of the theoretical value of the pipe line, assuming the value of the line to be declining as the gas reserves which it taps are drawn down. The present convention is that a pipe line company's debt should be extinguished in twenty years, geologists apparently being unwilling to forecast the availability of gas reserves beyond that term. In the 1930s a fifteen year term was considered prudent. Two of the principal natural gas holding companies[2] give their debentures 25-year terms, and scale the sinking funds so as to retire about two-thirds of the issue prior to maturity, thus giving the debentures an average term of about sixteen to seventeen years.

Effect on capital costs. - The effect of such sinking funds is to increase the capital costs if the net proceeds from the sale of the issue originally was less than par, and to lessen capital costs if the net proceeds were above par. The first mentioned situation is

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[2]The Columbia Gas System, Inc. and Consolidated Natural Gas Co.

EFFECT ON COST RATE OF SHORTENING THE TERM OF A DEBT CAPITAL ISSUE

Coupon rate . . . 3½% Nominal term . . . 20 years

Average term - due to sinking fund action . . . 11 years

Net proceeds from sale of issue	98	100	102
Cost rate to nominal maturity - 20 yrs.	3.64%	3.50%	3.36%
Cost rate to average maturity - 11 yrs.	3.77%	3.50%	3.27%

the one usually encountered in cost of capital analysis. The example shown above is intended to illustrate the point.

Effect of a redemption premium. - If a premium is required to be paid to redeem a bond for sinking fund purposes it will have the effect of increasing the cost of debt slightly. If, as is often the case, the issuing company has the option of buying up its bonds in the market, and tendering them to the sinking fund trustee at their nominal or par value, in lieu of cash, the issuing company may be saved this premium. Whether it will elect to do this or not depends upon market conditions, for the cost of acquiring the bonds in the market must obviously be less than the cost of having them retired by sinking fund, if the company is to take advantage of such a device. Under the circumstances the effect of these transactions can never be taken into account in advance; hence, when these provisions exist, the cost of "hiring" a particular sum of debt capital can never be ascertained with accuracy until the last bond has been

redeemed. As a practical matter, however, the effect upon the capital cost of this feature is usually de minimis.[3]

Illustration of data. - Natural gas companies seeking rate increases from the Federal Power Company are required to submit the data necessary to a determination of their debt capital costs with their applications. Table VII on the following page is an illustration of the data furnished. It was furnished by Northern Natural Gas Company, in connection with a recent rate proceeding.[4]

Unless there was persuasive reason for doing otherwise the cost rates adopted with respect to each debt capital issue would be those set forth on Line 7a of this table.

It will be noted that the cost rates given in this line differ in only one instance from the cost rates set forth on Line 7b, which rates are said to be "after consideration of refunding costs." It will be noted in the column headed, "Sinking Fund Debenture 3¼%," and refers to the issue due Nov. 1, 1973. The cost rate based on net proceeds per unit is 3.252% before consideration of these refinancing costs, and 3.532% after giving them consideration.

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[3]In certain studies recently undertaken by the author to determine the precise cost of debt capital to The Columbia Gas System, Inc., it was found that the difference in the cost rate assuming all sinking fund retirements at prescribed premiums and the cost rate assuming all sinking fund redemptions at par was 0.04%

[4]In the matter of Northern Natural Gas Company, F.P.C. Docket No. G-2505; Exhibit Relating to the Fair Rate of Return (No.16) sponsored by Dr. Henry Herz.

TABLE VII

NORTHERN NATURAL GAS COMPANY

ANNUAL COST OF DEBT CAPITAL OUTSTANDING AT DECEMBER 31, 1954, COMPUTED AS AT JUNE 30, 1955

1. Designation of Issue (Series and Rate)	UNIT	SERIAL DEBENTURES, DUE MAY 1					SINKING FUND DEBENTURES			COMPOSITE FOR ALL DEBENTURES
		2-3/8%	1-5/8s AND 2-3/8s COMBINED	2-1/2%	3-1/8%	2-5/8%	3-5/8%	3-1/4%	3-1/4%	
2. Approximate offering date	-	Oct. 31, 1945	Oct. 31, 1945	April 23, 1947	Dec. 1, 1948	June 14, 1950	Nov. 10, 1953	May 11, 1954	July 14, 1954	
3. Maturity	-	1956 - 1965	1950 - 1965	1956 - 1967	1966 - 1969	1953 - 1970	Nov. 1, 1973	Nov. 1, 1973	Nov. 1, 1974	
4. Principal amount offered	$	16 000 000	25 000 000	10 000 000	6 000 000	40 000 000	25 000 000	40 000 000	25 000 000	171 000 000
5. Proceeds of offering										
a. Gross proceeds, per unit	$	99.95	99.82	100.99	101.07	100.11	101.00	101.45	100.50	
b. Gross proceeds, aggregate	$	15 992 000	24 955 100	10 098 724	6 064 040	40 044 360	25 250 000	40 580 000	25 125 000	
c. Underwriters' commission, per unit	$	.55	.48	.79	.65	.55	.80	.70	.70	
d. Underwriters' commission, aggregate	$	87 360	120 750	78 674	38 840	220 000	200 000	280 000	175 000	
e. Issuance expense, per unit	$	-	.45	.56	.88	.36	.36	.35	.42	
f. Issuance expense, aggregate	$		111 454[a]	55 785	52 532	142 992	90 000	140 000	105 000	
g. Net proceeds, per unit	$	99.40[b]	98.89	99.64	99.54	99.20	99.84	100.40	99.38	
h. Net proceeds, aggregate	$	15 904 640[b]	24 722 896	9 964 265	5 972 668	39 681 368	24 960 000	40 160 000	24 845 000	
i. Transferred cost of refinancing	$							1 171 937		
j. Net proceeds after refunding costs										
(1) per unit	$							97.47		
(2) aggregate	$							38 988 063		
6. Average term to maturity from date of offering	Yrs.-Mos.	15-0		14-8	19-4	12-3	12-11	13-1	12-3	
7. Cost rate based on net proceeds per unit, calculated to average maturity										
a. Before consideration of refunding costs	%	2.423[b]		2.530	3.157	2.702	3.672[c]	3.252[c]	3.330[c]	
b. After consideration of refunding costs	%	2.423[b]		2.530	3.157	2.702	3.672[c]	3.532[c]	3.330[c]	
8. Principal amount outstanding at June 30, 1955	$	16 000 000		10 000 000	6 000 000	34 000 000	25 000 000	40 000 000	25 000 000	156 000 000
9. Unamortized debt discount, premium and expense at June 30, 1955										
a. Excluding refinancing costs	$	62 884[a]		15 885	17 904	184 688	34 847	(145 725)	142 350	
b. Including refinancing costs	$	62 884		15 885	17 904	184 688	34 847	921 675[d]	142 350	
10. Net proceeds and accumulated amortization at June 30, 1955 - aggregate										
a. Before consideration of refinancing costs	$	15 937 116		9 984 115	5 982 096	33 815 312	24 965 153	40 145 725	24 857 650	155 687 167
b. After consideration of refinancing costs	$	15 937 116		9 984 115	5 982 096	33 815 312	24 965 153	39 078 325	24 857 650	154 619 767
11. Net proceeds and accumulated amortization per unit, at June 30, 1955										
a. Before consideration of refinancing costs	$	99.61		99.84	99 70	99.46	99.86	100.36	99.43	
b. After consideration of refinancing costs	$	99.61		99.84	99.70	99.46	99.86	97.70	99.43	
12. Remaining average term to maturity at June 30, 1955	Yrs.-Mos.	5-4		6-6	12-8	8-7	11-3	11-11	11-3	
13. Adjusted cost rate for remaining average term to maturity										
a. Before consideration of refinancing costs	%	2.454		2.527	3.154	2.696	3.681[c]	3.253[c]	3.337[c]	
b. After consideration of refinancing costs	%	2.454		2.527	3.154	2.696	3.681[c]	3.556[c]	3.337[c]	
14. Annual carrying charges on capital used at June 30, 1955										
a. Before consideration of refinancing costs	$	392 600		252 700	189 200	916 600	920 300	1 301 200	834 300	4 806 900
b. After consideration of refinancing costs	$	392 600		252 700	189 200	916 600	920 300	1 422 400	834 300	4 928 100
15. Composite annual cost rate										
a. Before consideration of refinancing costs	%									3.088
b. After consideration of refinancing costs	%									3.187

(a) Breakdown not available, expenses treated as applicable to 2-3/8% series.
(b) Before expenses of offering.
(c) Giving effect to call premiums on bonds to be redeemed from sinking fund.
(d) Reflects application to costs of refinancing of same rate of amortization as that applied to premiums less expenses to obtain figure in line 9a.

The refinancing costs for which the higher cost rate purports to allow were incurred in 1954, and consisted, in the main, of the redemption premiums and unamortized discount and expense relating to the Northern Natural Gas Company debenture 4½s, due 1973, which the debenture 3½s, due 1973, were intended to replace. One theory of cost of capital analysis holds that these redemption premiums and the remaining unamortized discount and expense, less tax savings, should be amortized over the life of the replacement issue. The Federal Power Commission, however, has been unwilling to concede that provisions for the amortization of these costs should be made through the rate of return.

Weighted average cost of debt capital. - Shown below is an example of the calculation of the weighted average cost of debt capital, based on data furnished in Table

WEIGHTED AVERAGE COST OF NORTHERN NATURAL GAS CO. DEBT CAPITAL

Designation of Issue	Outstanding	Cost Rate	Annual Cost
Ser.Deb. 2-3/8s 1956-65	$16,000,000	2.423%	$387,680
Ser.Deb. 2-1/2s 1956-67	10,000,000	2.530	253,000
Ser.Deb. 3-1/8s 1966-69	6,000,000	3.157	189,420
Ser.Deb. 2-5/8s 1956-70	34,000,000	2.702	918,680
S.F.Deb. 3-5/8s 1973	25,000,000	3.672	918,000
S.F.Deb. 3-1/4s 1973	40,000,000	3.252	1,300,800
S.F.Deb. 3-1/4s 1974	25,000,000	3.330	832,500
Total	$156,000,000		$4,800,080

The weighted average cost of debt capital is thus $\frac{4,800,080}{156,000,000} \times 100 = 3.077\%$

Cost of Preferred Stock Capital

The procedure for determining the cost of preferred stock capital ("y" in the cost of capital formula) is essentially the same as that prescribed for determining the cost of debt capital, except that the calculations do not usually involve a fixed term. The essential elements are:

1. The annual dividend rate of each preferred stock issue, expressed in dollars per share;

2. The net proceeds resulting from the sale of each preferred stock issue, expressed in dollars per share; and

3. The net proceeds resulting from the sale of each preferred stock issue, expressed in dollars per share.

The dividend rate, divided by the net proceeds, will determine the cost rate for each issue, and the weighted average cost of all preferred stock capital may then be obtained in the same way that the weighted cost of debt capital is obtained, as illustrated on the preceding page.

Effect of retirement funds. - If there is a retirement fund designed to secure the retirement of a preferred stock issue over a period of years -- and in the natural gas pipe line business such retirement funds are a common practice -- then the cost should in theory, be calculated by use of the amortized yield tables. However the result obtained by following this procedure is unlikely to be materially different from the result obtained by following the above method,

unless the retirement period is unusually short. In the natural gas pipe line business twenty-five and thirty year retirement fund periods have been noted.

Table VIII, appearing on the following page, illustrates the sort of information regarding preferred stocks which applicants for rate increases are required to make available to the Federal Power Commission. If there is more than one preferred stock issue the value "y", used in the cost of capital formula, would be the weighted average cost of all preferred stock capital, calculated in a manner similar to that illustrated on page 170, supra.

It may be noted that the difference between the annual cost of this particular increment of capital calculated at the current rate, and the annual cost calculated on the limited life, or bond table basis, is 0.11 per cent. Unless the preferred stock constituted a very substantial portion of the total capital, a difference of this order would not affect the ultimate result more closely than to the second decimal place.

TABLE VIII

NORTHERN NATURAL GAS COMPANY

ANNUAL COST OF PREFERRED STOCK OUTSTANDING AT DECEMBER 31, 1954

		Cumulative, S.F. 5-1/2 Percent, par $100
1.	Designation of issue (Series, rate and par value)	
2.	Date offered	September 23, 1953
3.	Number of shares offered	250 000
4.	Gross proceeds of offering	
	a. Aggregate	$25 000 000
	b. Per share	100 00
5.	Underwriters' discount or commissions	
	a. Aggregate	$ 625 000
	b. Per share	2.50
	c. Percent of gross proceeds	2.50%
6.	Expenses of offering	
	a. Aggregate	$ 76 431
	b. Per share	.31
	c. Percent of gross proceeds	.31%
7.	Net proceeds	
	a. Aggregate	$24 298 569
	b. Per share	97.19
8.	Annual cost of net proceeds available	
	a. Current rate	5.66%
	b. Rate giving effect to limited life of issue because of sinking fund redemptions (bond table basis)	5.77%

Source: Exhibit 16 sponsored by Dr. Henry Hers in the Northern Natural Gas Company rate case before the Federal Power Commission, F.P.C. Docket No. G-2505.

CHAPTER XVI

DETERMINATION OF THE COST OF COMMON STOCK CAPITAL

Finding a figure to represent the cost of equity capital -- "z" in the cost of capital formula -- is as difficult and devious an undertaking as the finding of the costs of debt capital and preferred stock capital was straightforward, simple and relatively easy. The principles are the same, but the technique is different. One reason for this is that the series of expected returns, which investors are said to be seeking when they buy common stocks, is never stipulated by contract in this class of securities. Instead, common stockholders' returns depend upon the vagaries of business profits. Another difficulty is that the rate at which these expected returns, whatever they may be, are capitalized in the market, which is what gives rise to prices, is subject to constant and continuing readjustment. Moreover it is often influenced by developments, or anticipated developments, having little or nothing to do with the company in question.

This is not to say that debt capital costs and preferred stock capital costs are unaffected by these influences; the point is that it is the common stock which is most sensitive to them.

No historic cost. - For these reasons, and others, there is no appropriate historic cost of common stock capital, in the sense that the income per share being earned, or the dividend being

paid, when stock was being offered for sale represented an undertaking on the part of the issuing company to the effect that it would continue to earn and pay dividends at those rates. On the contrary, most everyone concerned usually hopes that earnings will increase, and that dividend payments will do likewise. Analytical procedures may be applied to appraise the possibilities that earnings will improve, remain stable, fall behind or vanish altogether. Statistical methods may be employed to determine the probabilities of the capitalization rate remaining stable, or rising or falling. But analytical procedures will produce, at best, only "educated guesses," and a heart attack in Washington, or a careless word in Moscow, may alter the capitalization rate outlook over night. In consequence of all this one of the most important things which must enter into the determination of the cost of equity capital is judgement.

The common stockholder's position. - Foster and Rodey, in their volume Public Utility Accounting, to which reference has been made previously in this study, describe the position of the common stockholder in a business enterprise thus:

> The essence of the position of the common stockholders is that they receive the residual earnings, the balance that remains after interest, preferred dividends and all other prior requirements have been provided.[1]

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[1] Op. cit., pp.192-3.

If profits are good the common stockholder may, presumably, take all. If profits are poor, or non-existant, the common stockholders get nothing, nor have they cause for complaint because management of the enterprise is presumed to be in their hands by virtue of their power to choose the directors; at least, so the theory goes.[2] Their position is thus in sharp contrast with that of the bondholders, who must be paid, else they may seize the capital assets.

Cost of common stock capital. - In the matter of the cost of common stock capital the same authors go on to say:

> The existence of a cost in the economic sense does not depend upon whether or not dividends are currently being paid. A cost of capital cannot be avoided merely by the nonpayment of dividends. No one would say that, everything else being equal, the more stable the dividend the lesser the cost of common stock capital, since in fact the contrary tends to be true. A margin of current earnings over current dividends commonly is a necessary condition of prospective ability to pay stable dividends at the current rate and is therefore an important component of the cost of common stock capital.[3]

Prospective returns capitalized. - Most cost of capital analysts seem to agree that the best evidence of the cost of equity capital is the rate at which investors capitalize prospective com-

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[2]As a matter of fact the directors of most large corporations are virtually self-perpetuating trustees, and it is extremely difficult for dissident stockholders to unseat them. This is especially true in the public utility field where the law prohibits a concentration of common stock holdings. Recent years have witnessed a number of "proxy battles" which seems to prove that established managements are not necessarily invulnerable.

[3]Op.cit., p.193.

mon share returns. These returns accrue in various ways. The most important one is the dividend. This is the share of the profits which is distributed to the common stockholders at the behest of the directors. Returns also accrue on earnings which are not paid out as dividends but which are, instead, "ploughed back" into the business, thereby increasing the common stockholders' equity therein.

Returns to stockholders also accrue when stock purchased at one price is sold at a higher price. By the same token negative returns result under reverse circumstances. Such returns come under the heading of capital gains, or losses, for income tax purposes. Returns also accrue when a stockholder derives some valuable right or privilege as result of his investment. A return of this sort would result if the company in question offered its common stockholders the right to subscribe for additional shares at a price below market. This has already been mentioned in Chapter III. Other less tangible returns may also accrue.

Factors affecting the capitalization rate. - Mr. Tatham, in his contribution to the Third Edition of Graham and Dodd's Security Analysis, says that the various factors which influence the capitalization rate may be grouped under three headings, as follows:

1. Those associated with the prospective growth of the enterprize;

2. Those reflecting the known or expected stability of the business; and

3. Those relating to the distribution of earnings, or dividend payout.[4]

With a little imagination about anything which can happen to a business enterprise, or the business world in general, can be classified under one or more of these headings.

Were it possible to assign numerical values and weights to each of the above factors, and subfactors contributory thereto, and to set up a formula tying them in to the capitalization rate, our task would be finished. But the techniques of security analysis, which is what is involved here, have not progressed that far. In point of fact the only factors which can be so expressed are earnings and dividends. Payout, another mathematically expressible quantity, is the percentage relationship between these two. There is also market price and book value.

Market price. - The chief clue to the appropriate capitalization rate is the price at which the common shares of the company sell in a free and open market, such as the stock exchange. If at the same time that a price was ascertained it were possible to determine what a company was going to earn for as many years ahead as one cared to look, then the capitalization rate might be deter-

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[4]Op. cit., p. 509.

mined from the following formula

$$\frac{E_1 + E_2 + E_3 + \cdots E_n}{n\,P} \times 100 = r$$

where E_1, E_2, E_3, etc. are the earnings per share for as many years ahead as it is desired to look; "n" is the number of years, "P is the present market price, and "r" is the capitalization rate. Multiplication by 100 puts the results on a percentage basis.

But peering into the future in this manner is difficult if not impossible, though many security analysts attempt it; some successfully, others not. Lord Keynes says:

> Our knowledge of the factors which will govern the yield of an investment, some years hence, is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield, ten years hence, of a railway, a copper mine, a textile factory, the goodwill of a patent medicine, an Atlantic liner, a building in the City of London amounts to little, and sometimes to nothing; or even five years hence. In fact, those who seriously attempt to make any such estimate are often so much in the minority that their behavoir does not govern the market.[5]

Earnings-price ratios. - It being, as Lord Keynes says, virtually impossible to forecast future earnings, at least successfully, most persons concerned with determining the cost of equity capital fall back upon the assumption that the next best clue to the capitalization rate is the rate at which current market prices capitalize the best available indications as to

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[5]J. M. Keynes, The General Theory of Employment, Interest and Money (New York: Harcourt Brace and Company, n.d.) pp. 149-150.

earning power, that is to say, earnings per share available for common dividend payments.

Such an assumption, of course, runs counter to the belief, generally entertained by economists and practical men of finance, that to-day's prices for the stock of a particular company, discount to-morrow's earnings, and other developments, rather than yesterday's results. Nonetheless some sort of assumption, such as this, is a necessary one if the analyst is ever going to get anywhere in his search for an appropriate capitalization rate to use as "Z" in the cost of capital formula, the use of which is here being examined. The approach can be justified, if somewhat weakly, on the grounds that the best guide to the future is the past, and that the public utility business, because of its traditional stability, is more amenable to short-term forecasts that are most industries.

The earnings-capitalized formula may be expressed thus:

$$E/P \times 100 = e$$

where "E" represents earnings per common share; "P" is the market price, and "e" is the capitalization rate. The purpose of multiplying by 100 seems obvious. The relationship thus expressed is also called the earnings-price ratio. In its reciprocal form, as the price-earnings ratio, it is a tool employed by Wall Street analysts and other financial writers to compare stocks and groups of stocks one with the other. Another way of describing it is as

the price per share which investors will pay for a dollar per share of earnings.

What earnings ? What price ? - Proceeding upon the assumption that the earnings-price ratio is the best available clue to the capitalization rate, the next thing to be determined is what earnings and what prices should be compared to produce the most pertinent ratio.

On the theory that stock market prices discount the future the best earnings-price ratio within human capabilities would seem to be that which compares to-day's best estimate of to-morrow's earnings with to-day's most recent price for the stock. But to assemble such estimates, and make them of even quality, is a task to which few persons, capable of making them, would care to give their time. Once again the analyst is confronted with the necessity for compromise.

Latest earnings, latest price. - To this end a very common practice is to use the latest available reported earnings, and the latest available market price for the stock. Most public utility companies publish their earnings quarterly, on a twelve months basis, so information as to the earning power of the company under scrutiny is brought up to date with reasonable regularity. Most public utility company common stocks are listed on a stock exchange, or traded actively in the over-the-counter market, so recent prices are almost always available. This permits successive solutions of the "earnings-

capitalized" equation to be made at whatever interval the analyst desires. In the author's experience monthly calculations serve practical purposes very well.

This method possesses a basic defect which will presently be discussed. Its advantages are that it is factual, can be conveniently assembled with the aid of a few current financial publications, and can, at all times, be kept up to date.[6] Also the judgement factor, which would necessarily be involved in any series of ratios based on estimates, is eliminated. Illustrations of the results to be obtained by following this method will be supplied, presently.

Defect. - The basic defect in this method is that the earnings and prices which are being combined to obtain the ratios are always out of phase with one another. It results in a series of comparisons of yesterday's earnings with to-day's prices, whereas the ideal would be a comparison of to-day's prices with to-morrow's earnings, as has just been stated.

This out-of-phase-ness is due, partly, to the inevitable but unavoidable lag in the publication of corporate earnings statements, which means that by the time a natural gas company, or any public utility, for that matter, is ready to make known to the public what

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[6] In assembling such ratios the author makes use of The Wall Street Journal, for stock market prices, and Moody's Public Utility Supplements, for earnings. Standard & Poor's Security Owners Stock Guide is also useful.

it earned, say during the 12 months ended March 31, it may already be six weeks to two months into its next reporting period, and the factors which are going to affect the earnings statement for the 12 months ended June 30 have already become apparent to alert observers. On the theory that the stock market always looks ahead, an earnings-price ratio calculated as of the end of May, for example, would be two months out of step; at the end of June it would be three months out of step, and so on.

"Forward basis" ratios. - To correct this defect some students of the capitalization rate use what is sometimes called the "forward basis" ratio. By this process, and referring back to the example cited above, the ratio would be developed by referring March stock prices to the earnings for the yearly period ending with March 31, June prices to the June 30 earnings, and so on. For intervening months' ratios some authorities go so far as to interpolate to obtain intermediate months' earnings, market prices being usually always available.[7]

Illustration. - To illustrate the difference between the latest-available-earnings over latest-available-price type of ratio,

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[7]If a company which reports quarterly, on a 12 months basis, reported that it had earned $3.30 per share of its common stock during the 12 months ended March 31, and later reported that it had earned $3.60 per share during the 12 months ended June 30, interpolation would lead to the assumption that it had earned $3.40 per share during the 12 months ended April 30, and $3.50 per share during the 12 months ended May 31.

and the forward basis ratio, reference is made to the record of earnings and prices of El Paso Natural Gas Company, one of the prominent western pipe line companies, for the year 1956. El Paso publishes earnings statements monthly. Its common shares are listed on the New York Stock Exchange.

Latest-available basis ratio. - As of December 31, 1955 the latest information available to the investing public was that this company had earned $2.50 per share of its common stock during the 12 months ended October 31, 1955. The last price at which its common stock had sold on the New York Stock Exchange on the final trading day of the year was 48. Combining these figures according to the earnings-capitalized formula would have produced the following result:

$$\frac{2.50}{48} \times 100 = 5.2\%$$

This 5.2% would have been the earnings-price ratio as of that date.

Forward basis ratio. - During April, 1956, El Paso published its Annual Report for the year 1955. Among other things this report showed that the company had earned $3.08 per share on its common stock during the year 1955; that is to say, during the 12 months ended December 31, 1955. The forward basis ratio would then be calculated by comparing, mathematically, the 1955 earnings for 1955 with the price as of the end of 1955. The calculation would have been as shown at the top of the next page.

$$\frac{3.08}{48} \times 100 = 6.4\%$$

It is significant to note that it was impossible to evaluate the 1955 year-end market price, thus, until four months later, after the 1955 earnings had appeared. The difference between the two ratios is striking. Which has the greater significance as a measure of the cost of common equity capital ?

Comparison. - Table XIV, on the following page, has been designed to facilitate comparison of the results obtained from following the two systems of earnings-price ratio determination over a single year, and over a somewhat longer period. As will be noted the differences seem, at times, to be marked. At other times they seem insignificant. In 1956, for example, the difference is 0.7 of 1 per cent, a significant quantity if applied to a large equity.

On the other hand the differences in other years, as will be seen from the lower half of Table XIV are smaller, while the difference between the five year averages on the "latest available" basis and the "forward" basis is only 0.3 of 1 per cent.

In the author's mind there is no doubt as to the theoretical superiority of the forward basis ratio over the latest-available basis ratio, as a measure of the cost of equity capital. Yet the system by which the former is created has its drawbacks, in that it is less convenient to assemble. Also, as has been observed previously, it is

TABLE XIV

COMPARISON OF EARNINGS-PRICE RATIOS CALCULATED ON THE "LATEST AVAILABLE" BASIS AND THE "FORWARD" BASIS

El Paso Natural Gas Company Common Stock

	"Latest-available" basis	"Forward" basis
(A) For the year 1956		
As of the last day of		
January	5.9 %	6.4 %
February	6.2	7.7
March	6.3	8.3
April	6.3	7.6
May	7.5	7.5
June	7.2	7.4
July	6.5	6.8
August	6.9	7.2
September	7.4	8.1
October	6.9	7.4
November	7.8	7.8
December	6.7	-
Average	6.8 %	(a)7.5 %
(a) 11 months		
(B) Average of monthly ratios		
1951	9.0 %	10.0 %
1952	8.5	8.4
1953	8.3	8.4
1954	7.2	7.3
1955	4.7	6.1
Average (5 years)	7.5 %	7.8 %

never quite up to date. As result of this and other studies of this type of ratio versus the more commonplace latest-available-earnings, latest-available-price type of ratio it is his conclusion that the latter serves the use to which it is put adequately, and that the differences between the two tend to become de minimis as the record is extended. Determination of the cost of equity capital is by no means the precise science which some students of the subject seemingly like to make it.

To facilitate further study a Table showing the earnings-price ratios registered by El Paso Natural Gas Company common stock, calculated by the simpler method for the period 1945 through 1956 is furnished on the following page.

What about contingent earnings ? - Another problem with which the cost of capital analyst sometimes has to struggle is the matter of contingent earnings. Public service companies frequently have to advise their stockholders that a certain portion of the earnings which they are reporting are contingent upon the outcome of certain rate cases, or litigation, in which they may be involved. The usual reason for this is, as suggested in Chapter IX, that they are collecting bills from customers at rates which are in effect under bond, and they will not know, nor will anyone else know, whether or not they are going to be able to keep the money until the rate cases are decided.

What, then, is the proper figure to use in such cases in calculating the earnings-price ratio ?

TABLE XV

EL PASO NATURAL GAS COMPANY

Earnings-Price Ratios*

	1945	1946	1947	1948	1949	1950
January	10.0%	6.4%	6.8%	7.9%	9.7%	6.8%
February	9.5	6.3	7.1	8.2	9.8	6.9
March	10.4	6.8	7.4	8.0	9.1	6.9
April	9.8	6.2	7.5	7.7	9.1	6.8
May	9.5	6.0	8.1	7.6	8.8	6.4
June	9.6	5.6	8.2	8.7	9.2	6.9
July	9.8	6.0	7.9	9.1	9.5	7.9
August	9.3	6.2	8.5	8.7	9.1	7.9
September	8.7	6.9	8.1	9.5	8.5	7.8
October	8.0	7.0	8.3	9.2	8.3	8.4
November	7.3	6.9	8.1	9.9	7.1	9.0
December	7.2	6.8	8.2	10.1	6.8	8.0
Average	9.0%	6.4%	7.9%	8.7%	9.7%	7.4%

	1951	1952	1953	1954	1955	1956
January	7.3%	8.8%	7.8%	8.1%	4.8%	5.9%
February	7.3	9.2	7.9	8.1	4.6	6.2
March	8.8	8.6	8.3	8.3	4.1	6.3
April	8.6	9.2	8.7	8.5	3.9	6.3
May	10.2	8.2	8.5	7.9	3.9	7.5
June	10.2	8.1	9.1	6.9	4.1	7.2
July	9.6	7.9	8.0	6.8	4.7	6.5
August	9.5	7.9	8.4	6.7	5.0	6.9
September	9.2	8.8	8.4	6.6	5.3	7.4
October	9.1	8.5	8.1	6.7	5.0	6.9
November	9.3	8.1	7.9	5.7	5.7	7.8
December	8.9	8.1	8.4	5.5	5.2	6.7
Average	9.0%	8.5%	8.3%	7.2%	4.7%	6.8%

*Based on latest available earnings at the month-end.

Very obviously only someone with intimate knowledge of each rate case, including the fine points of law involved, company policies and personalities would be in a position to even guess what the outcome might be. And if a person of such wisdom were sufficiently injudicious to venture a guess, such guesses could even then be wrong, or only partially right.

Generally speaking the analyst's "out," in such cases, is to use whatever figures are available, and assume that investors are aware of the circumstances, and are forming their own judgements as to the outcome, all of which will find its ultimate expression in market price. If more than one figure as to earnings per share are made available, the analyst may very well consider all. This will produce a range of values which may have a temporary usefulness. In any event, it will be a "best available" appraisal, and that may be about as close as the analyst may be able to get to what he is seeking. Determination of the cost of common stock capital, as has been remarked earlier, and may be remarked again, is not a precision undertaking.

Industry-wide capitalization rates. - In addition to the sort of data shown in Table XV, for an individual company, it is often useful to consider the industry-wide record. In a certain sense this may be considered as bringing into play the "corresponding risks and uncertainties" precept of the Bluefield and Hope decisions.

TABLE XVI

LONG TERM RECORD OF CAPITALIZATION RATES

NATURAL GAS PIPE LINE COMPANIES

	1940	1941	1942	1943	1944	1945
January	10.5%	11.8%	13.7%	12.4%	10.4%	9.4%
February	9.8	12.3	13.3	11.8	10.3	9.1
March	10.0	12.4	15.0	11.6	10.6	9.4
April	10.2	13.6	16.1	11.3	10.9	9.1
May	12.9	13.1	16.2	10.5	10.8	9.3
June	11.3	12.7	16.3	10.6	10.8	8.5
July	13.3	11.5	15.7	10.3	10.7	8.9
August	13.3	11.5	15.1	10.3	10.3	8.8
September	13.0	11.5	14.8	10.1	10.4	8.7
October	12.3	11.9	14.6	10.1	10.0	8.2
November	11.9	14.2	13.8	10.6	10.3	7.5
December	11.9	15.6	13.5	10.6	10.0	7.4
Average	11.7%	12.7%	14.8%	10.9%	10.5%	8.7%

	1946	1947	1948	1949	1950	1951
January	6.6%	7.6%	9.4%	8.9%	6.8%	7.4%
February	7.2	7.8	9.9	9.2	6.8	7.3
March	6.8	8.3	9.2	8.8	6.7	7.3
April	6.7	8.4	8.7	9.1	6.9	7.4
May	6.8	9.2	8.5	9.1	6.7	7.6
June	6.9	9.1	8.4	9.3	7.2	7.6
July	7.1	8.9	8.5	9.1	8.5	6.7
August	7.6	9.4	8.4	8.5	8.0	6.6
September	8.1	9.2	8.7	8.3	7.7	6.5
October	8.0	8.9	8.6	7.6	7.9	6.4
November	8.1	9.0	9.3	7.3	8.0	6.6
December	7.9	9.0	9.3	6.8	7.9	6.4
Average	7.3%	8.7%	9.0%	8.5%	7.4%	7.0%

(table continued on following page)

TABLE XVI - Continued

LONG TERM RECORD OF CAPITALIZATION RATES

NATURAL GAS PIPE LINE COMPANIES

	1952	1953	1954	1955	1956	1957
January	6.2%	5.9%	6.8%	6.0%	6.4%	
February	6.4	6.3	6.8	5.5	6.8	
March	6.0	6.5	6.8	5.4	6.7	
April	6.3	7.0	7.0	5.3	6.9	
May	6.2	7.0	7.0	5.5	7.4	
June	6.2	7.3	6.9	5.5	7.2	
July	6.0	7.1	6.8	5.7	6.5	
August	6.3	7.6	6.4	6.0	6.8	
September	6.6	7.7	6.4	6.4	7.0	
October	6.4	7.1	6.8	6.3	6.7	
November	6.2	7.0	6.2	6.4	6.9	
December	6.0	7.1	6.1	6.4	6.4	
Average	6.2%	7.0%	6.7%	5.9%	6.8%	

Note: the foregoing values are based on the closing market prices as of the end of each month and the latest avialable earnings for a 12 months period preceding that particular month. For a list of the stocks used, and an example of the manner of calculating an entry, see Appendix

Source: Exhibits used in rate cases involving natural gas pipe line companies by members of the staff of the Division of Finance and Statistics of the Federal Power Commission.

For such purposes the analyst might very well turn to a tabulation, such as the one shown on the preceding page, which sets forth a sort of composite earnings-price ratio, based on the earnings and month-end stock prices of several leading natural gas company stocks.

A long-term record, in summary form, comparing the average annual capitalization rates for this, and two other groups of natural gas companies, is provided on the page following this one.

Representative period of time. - In drawing conclusions from data such as is provided in any of these tables the time selected is of great importance. It is patently unfair, for example, to select any single entry and say that that represents the cost of equity capital which will be figured into the cost of capital formula and used as a basis for determining the fair rate of return. The better practice is to take a range or average of a series of ratios, covering what is sometimes described as a "representative period of time."

Here, again, the dilemma is compounded. What is a representative period of time ? Is it one year, two years, five years, or ten ? Obviously, any figure within the range of these tables could be adduced therefrom by careful selection, but unless the rationale is sound and convincing, the choice is certain to be challenged.

Economic cycle ? - In theory, probably, the representative interval should be that which encompasses a full swing of the economic cycle as, for example, the period from 1921 through 1932. But the natural gas business as it existed during that period bears little or

TABLE XVII

CAPITALIZATION RATES INDICATED BY THE PRICES OF NATURAL GAS INDUSTRY STOCKS

(Average of monthly composites)

1940 - 1956

Year	Pipe Line Companies (Group A)	Pipe Line Companies (Group B)	Integrated Companies
1940	11.7%	-	-
1941	12.7	-	-
1942	14.8	-	-
1943	10.9	-	-
1944	10.5	-	-
1945	8.7	-	-
1946	7.3	-	-
1947	8.7	-	-
1948	9.0	-	9.2%
1949	8.5	7.6%	8.3
1950	7.4	7.4	8.1
1951	7.0	8.9	8.7
1952	6.2	7.3	7.1
1953	7.0	6.8	7.2
1954	6.7	6.6	6.7
1955	5.9	5.9	6.7
1956	6.8	7.0	7.5

For a list of companies comprising each group see the Appendix.

no resemblance to the business as it has existed since 1932, or even since 1945, for that matter. Moreover, it would appear that the economic cycle which started at the nadir of the depression in 1932 has never run a full course in what might be termed the classical sense.

Post-war era ? - Again, from another point of view the end of World War II seems an appropriate take-off point for the consideration of business indicia. This proposition is based on the theory that the end of that war ushered in a new economic era, which indeed it did, insofar as the natural gas pipe line business is concerned. However, the sensational growth demonstrated by that business during the 1946-1955 decade seems unlikely to be repeated, if for no other reason than that the frontiers of service, insofar as natural gas pipelines are concerned, seem now to have been extended to their limits. In short the business has reached the limits of the extensive phase of its development, and is now entering the intensive phase.

For reasons such as these it seems unfair to the industry to base its common equity capital allowance entirely on a period when its business has been booming. The leavening effect of leaner years is needed. However, the attempt to give consideration to leaner years, through statistical media such as has been shown in the last three tables runs into the practical difficulty that only four common stocks, representing companies which are now prominent in the natural gas pipe

line business, were available to investors at large prior to 1940, and of these only one had been on the market for any length of time.[8]

Best available. - For present purposes, then, the 17-year record of earnings-price ratios, summarized in Table XVII, seems to be the best available indication of what the appropriate allowance for common equity capital should be. The over all average for this period is about nine per cent. It does not, of course, follow that this is a satisfactory allowance for all natural gas companies. The individual circumstances of each company must also receive consideration. From the regulatory agency viewpoint, of course, the longer the record which is available for study, the sounder and more convincing will be the result.

Adjustment for financing costs. - Any allowance for common equity based on earnings-price ratios must take into consideration the matter of financing costs. This is because the net proceeds realized by a company issuing and selling common stocks is going to be less than the going market price for its shares. This is because the offering creates a temporary over-supply which puts the going market price under pressure.

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[8]According to Moody's Public Utility Manual (1940) these were: Lone Star Gas Corporation common, predecessor of the present Lone Star Gas Company; El Paso Natural Gas Company common, Panhandle Eastern Pipe Line Company common and Consolidated Gas Utilities Corporation common. Of these only the Lone Star Gas Corporation common had been on the market for any great length of time.

Thus, for example, if the earnings-price ratios indicate that nine per cent is an appropriate allowance for the common equity component of capital, the rate to be taken into consideration in fixing a reasonable rate of return should be increased by a financing increment. Conversely, if the over-all rate of return were fixed at nine per cent, the nine per cent would have to be reduced by the financing increment in order to discover the net common equity return.

The amount of this financing increment is, once again, a matter of experience and judgment. Tables X and XI of Chapter XIII represent the accumulated experience of a decade with offerings of natural gas company stocks. Where public offerings are involved ½ of 1 per cent would appear to be adequate, based on this experience. Where rights offerings are involved, and the subscription price must be noticeably less than the going market price in order to give the rights value 1.3 per cent appears appropriate.

To sum up: earnings-price ratios are useful as indications of the cost of or, as the rate which should be allowed for the common equity portion of total capital only when they are adopted with judgment, and with due regard for other factors which may influence common stock prices. Some of these factors will be presented and discussed in the next chapter.

Chapter XVII

DETERMINATION OF THE COST OF COMMON STOCK CAPITAL

Continued

What are some of the other ways of determining common stock capital costs ? What are some of the other things which need to be taken into consideration in arriving at the final figure ?

Measurement by recent offerings. - It is sometimes possible to take a direct approach to the question of equity capital costs when the company in question, or another one like it, has made a recent public offering of additional shares of its capital stock. There have been about thirty-five such offerings since 1946 by prominent pipe line companies, not all of which have been offerings in behalf of the companies themselves.

About half of these sales have been offerings via underwriters; the other half have been offerings to existing stockholders via rights. Tables X and XI of Chapter XIII summarize these offerings.

One of the difficulties encountered in making use of this type of evidence, relative to equity capital costs, is that such offerings have not occurred with sufficient frequency to be useful as the sole guide to the cost of equity capital for a particular company. They are, however, very useful as a check on the results obtained by other methods. It should be noted that in cases where a stock is offered via rights, a discount from market price is involved which usu-

ally increases the increment which must be included to cover financing costs.

Procedure when no market exists. - It sometimes happens that earnings-price ratios for a particular pipe line company are not determinable, due to the fact that all of its stock is owned by another company, and never comes on the market. This is a common occurrence when the applicant company is a subsidiary of a holding company, such as The Columbia Gas System, Inc., or United Gas Corporation.

When this happens the usual practice is to fall back on the earnings-price ratio record, capital ratios, dividend payout record and so on of the holding company, for an indication as to an appropriate allowance or cost rate for common stock capital.

Holding company earnings-price ratios, it has been found, run somewhat higher than operating company earnings-price ratios. This may reflect a lurking distrust of the holding company form of enterprise. Table XVII reflects this.

Whenever there is no clear indication of equity capital costs to the operating company or to the holding company resort must be had to industry-wide averages for indications of equity capital costs. Table XVI affords information of this sort.

Yield and other factors. - What is the significance of dividends, yields, book values, capital structure and other factors which

public utility analysts weave into their examinations of public utility stock prices ? Some authorities, for example, conceive that yield, which is the percentage relationship of the dividend rate being paid, to the market price for the shares, is a most appropriate measure of the cost of common stock capital.

A basic objection to this use of yield is that the dividend rate, upon which it partially depends, is something which is under the control of the board of directors. Thus it is susceptible of manipulation to a limited extent, if the directors believed that that would serve any useful purpose. Also complete reliance on yield, as a measure of the cost of common stock capital could lead to the absurd conclusion that the cost was zero when no dividends were being paid ! Actually a company paying no dividends usually has a much harder time raising equity capital than a company with a good dividend paying record.

As a matter of experience it may be noted here that over the past decade natural gas pipe line company stocks have, on average, sold on a yield basis of slightly less than five per cent. This reflects considerable investor confidence in the business. However, it is very doubtful if any natural gas pipe line company would settle with the regulatory authorities for a rate of return which allowed as little as five per cent on its common equity. As will presently be seen, Federal Power Commission allowances (for equity) have been about twice that figure.

It is the author's view that yield has its greatest usefulness as a collateral indication of what the proper return on common equity capital should be. If the yield is below industry averages it may be reasoned that the company in question is on good terms with investors, that its stock is highly regarded and that it will probably have little difficulty in raising additional common stock capital on favorable terms.

If, on the other hand, the yield is above industry averages, it would seem to be obvious that investor confidence in the company was lacking; but an alert regulatory agency might do well to inquire into this aspect of the matter carefully before accepting this fact as evidence of need for a higher rate of return.

Payout. - Closely related to dividends is the matter of payout; Graham and Dodd define this as the percentage of available earnings paid out as common dividends.[1] They say it has an important effect upon investors' attitudes towards the issue in a typical case.

In the author's experience low payout, where so long continued as to represent deliberate management policy, has a tendency to depress stock prices.

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[1]Benj. Graham and David L. Dodd, Security Analysis (New York: McGraw-Hill Book Co.,Inc.,1951) 3rd Ed. p. 200.

Excessive payouts might have a similar tendency because investors are prone to suspect that liberal payments may not be long continued, and tend to bid less for the stock concerned than they might pay had they confidence in the continuation of a more conservative rate of dividend.

On this point Graham and Dodd say:

> "Retained earnings are valued by investors at a much lower rate than those which are distributed." [2]

They go on to develop the theory that the optimum payout, in the case of a public utility, should be a function of the margin whereby a company covers its fixed charges.

According to the examples which they cite, a company covering its fixed charges about ten times could afford to pay out about ninety per cent of the balance available for common as dividends. A company covering its fixed charges three times could afford a payout of about eighty-five per cent, and a company whose fixed charges were really burdensome should not pay out more than two-thirds of its common share earnings as dividends.[3]

By these standards the natural gas pipe line business, which has been covering its fixed charges three times or better, on average, over the past decade, could afford an eighty-five per cent payout.

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[2] Ibid., p. 273.

[3] Ibid., p. 273-6.

As a matter of fact, the payout in the natural gas pipe line business has been much more conservative than this, having averaged sixty-seven per cent over the 1946-1955 decade.

Speculative returns. - Many who purchase common stocks do so because they hope to profit from appreciation in the market value of the shares. There is no doubt that many who have purchased the common stocks of natural gas pipe line companies, since 1946 or earlier, have had this purpose in mind. Some venturesome individuals likewise seek capital gains through "short selling," but it is doubtful if there has been very much profit of this sort to be had in natural gas company shares, of late. Profits of this sort are as much a part of the return as the dividends received to this class of investors.

There is no doubt but what speculative buying (or short selling) having capital gains in view has a decided influence on market prices from time to time. Thus, to some extent, speculative activity may diminish (or enhance) the apparent rates at which other, more obvious forms of expected returns are being capitalized. But it is extremely difficult for anyone not intimately identified with trading activity, either on the floor of an exchange, on in the over-the-counter market to detect speculative activity of this sort. It is even more difficult to isolate its effect.

Book value. - The complaint is often heard that use of cost of capital as an approach to fair rate of return is an erroneous pro-

cedure because it takes a factor which is derived from the market value of the common equity, namely an earnings-price ratio, and applies it to the book value of the common equity, in order to determine a fair return. Such complaint is heard most frequently when the market value exceeds book value. If the situation were the other way around, complaints of this nature might be expected to subside.

Original cost. - The situation in this respect is the outcome of the application of the doctrine of original cost. Thus the book value of a common stock represents capital which has been paid in, or retained out of earnings over a period of time. By contrast the market value of the common equity may be accepted as representing the present day valuation of the properties bought with those dollars. Inflation has disturbed the nominal equivalency between these two values. To allow the return on the common equity to be applied to the market value of that equity, rather than to the book value, would be to allow present value and reproduction cost to come in through the back door.

Capital structure. - The capital structure of a pipe line company has both a direct effect and an indirect effect upon the cost of capital to that company. The direct effect results from the fact that the proportions of debt capital, preferred stock capital and common equity capital are multipliers in the cost of capital calculation. This was explained in Chapter XIV.

The indirect influence of the capital structure is felt when one type of capital is present in disproportionate quantity, in which

case it will have a noticeable effect upon the cost of that particular type of capital.

Top limit of debt capital. - When new natural gas pipe line companies apply to the Federal Power Commission for certificates of public convenience and necessity they are required to show that they will start out with no more than 75 per cent of total capitalization represented by debt capital, and no less than 15 per cent common equity. The 10 per cent in between may be filled with preferred stock capital, or additional common, as the applicant elects. Generally speaking, then, 75 per cent represents the top limit of debt capital for companies of this type.

Ideal capital structure. - There does not seem to be any such thing as an ideal capital structure for natural gas pipe line companies. Such standards as there are are, perforce, largely empirical. A composite balance sheet of all pipe line companies reporting to the Federal Power Commission as of the end of 1956 showed the following industry wide proportions:[4]

Long-term debt	59.9%
Preferred stock	8.5
Common stock	20.5
Surplus	11.1
TOTAL CAPITALIZATION .	100.0%

[4]Based on figures furnished the author by the staff of the Federal Power Commission in advance of their publication in Statistics of Natural Gas Companies 1956 (Federal Power Commission, Washington, DC.)

Income tax considerations. - One reason why companies favor the employment of debt capital is that the interest charges thereon are fully deductible, as a business expense, for Federal income tax purposes. As this works out increasing the proportion of debt capital minimizes the Federal income tax liability, and maximizes the return earned on the common equity. This is one of the additional manifestations of leverage.

The author considers that the proportions set forth at the bottom of the preceding page represent fair working standards for natural gas pipe line companies. If the debt capital exceeds 90 per cent of total capital, the risk factor in the senior securities will be increased to the extent that they will receive lower investment ratings, and increase borrowing costs. At the other end of the scale, however, borrowing rates are not greatly reduced by keeping the debt capital ratio below 35 per cent.

Common equity capital. - In the matter of common equity capital it is the author's belief that it should never amount to less than 25 per cent of the total capitalization. Exceptions to this may be made when the company is new. At the same time there seems to be nothing gained by building up a long equity position. While stocks of this character have investment appeal because of their large stake in the properties, they are lacking in speculative appeal because of the lack of leverage. Additionally a situation of this sort lays a company open to the charge of not using its investment credit to best advantage.

Growth. - Growth is attractive to investors; they feel there are profits to be made through association with an industry which is on the upgrade. It seems unnecessary to observe that the natural gas pipe line business has been growing at a rapid rate during the past decade; this fact has already been demonstrated in Chapter VIII of this study. The effect of investor interest in growth industries is to make it easy for participating units to attract capital, and thus lessen its cost.

Stability. - So long as growth is manifest, stability of earning power is a minor consideration; during depressions, however, it becomes very important.

The electric light and power business and the telephone business have enviable records of stability of earnings and maintenance of dividend payments during depressed periods of general business. For such reasons the stocks of these companies are highly regarded investment media.

As a regulated public utility business, with promising prospects, the natural gas business shares to some extent in the feeling of confidence which investors display towards these other regulated businesses, although possibly not in the same degree. The natural gas business has to its credit the fact that the companies which were organized in 1928, 1929 and 1930 came virtually unscathed through the Great Depression, and are in very strong positions to-day. Any present misgivings which investors may have concerning the stability of this

business seem to relate principally to fears of exhaustion of the gas reserves and fears of the effect of competition with other fuels. Fear of the effect of ill-advised regulation may also be a factor, but the author doubts that it is a serious one. It is difficult to say when, if ever, investors in natural gas issues will be as completely reassured on any of these points as they presently seem to be with respect to electric and gas stocks.

Summary

Many factors, some of the more important of which have been discussed above, influence the prices at which the shares of natural gas companies sell in the market; hence the rate at which investors, collectively, capitalize the prospective returns from these shares. When all the evidence in a rate case has been submitted some appropriate authority, meaning a hearing examiner, commission or court, must decide upon the basis of all relevant factors what rate of return is necessary in order that a company may be enabled to

> maintain and support its credit and . . . raise the money necessary for the proper discharge of its public duties.[5]

They must, at the same time, be sufficiently lucid in explaining their determination so that it will stand the test of judicial review.

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[5] Bluefield W.W. & Imp. Co. v. West Va. Pub. Serv. Com. 262 U.S. 679, 692 (1923).

Cost of capital is not here offered as a mechanistic method for the solution of the rate of return issue in public utility rate cases nor can it, in the present stage of its development, be applied to the solution of this problem without liberal allowances of the all important factor of judgment. What it does is to narrow the area in which that judgement must be exercised.

Certain of the most critical factors which need to be studied when forming judgments in this area have been outlined in this chapter and in the preceding chapter. Some of the results of the application of judgment to these factors, as exemplified by opinions of the Federal Power Commission in natural gas pipe line company rate cases will be examined in the two chapters to follow.

PART IV

APPLICATIONS OF THE COST OF CAPITAL PRINCIPLES

TABLE XVIII

RATES OF RETURN ALLOWED NATURAL GAS PIPE LINE COMPANIES

BY THE FEDERAL POWER COMMISSION SINCE JULY 1952

Date	Name of Company	Opinion No.	Over-all Rate of Return Allowed	Return Allowed on Common Equity
8 -7-53	United Fuel Gas Co.	258	6.25%	10.1%
4-15-54	Panhandle Eastern Pipe Line Company	267	5.75%	11.4%
7- 1-54	Home Gas Co. and Manufacturers Lt. and Heat Co.	272	6.25%	9.7%
7-26-54	Ohio Fuel Gas Co.	273	6.25%	9.7%
7-28-54	Michigan-Wisconsin Pipe Line Co.	275	6.00%	10.3%
10- 1-54	Hope Natural Gas Co.	(a)	6.25%	7.9% - 9%
11-10-54	Texas Illinois Natural Gas Pipeline Co.	(a)	6.00%	10.2%
11-26-54	El Paso Natural Gas Co.	278	6.00%	14.4%
7-27-55	Natural Gas Pipeline Co. of America	(b)	6.00%	9.0%
8-16-56	Olin Gas Transmission Co.	(c)	6.50%	6.5%

(a) Decision of a Presiding Examiner adopted by the Commission.
(b) Decision of a Presiding Examiner modified by the Commission.
(c) Decision of a Presiding Examiner on which action is pending.

CHAPTER XVIII

OPINIONS ISSUED AFTER 1952 INVOLVING RATE OF RETURN FOR NATURAL GAS PIPE LINE COMPANIES

Since 1952, when it made its introductory attempts to deal with the rate of return issue in terms of capital costs, the Federal Power Commission has promulgated about ten more opinions in which it has treated importantly with this question. The 1952 trilogy, which involved Northern Natural Gas Company, Colorado Interstate Gas Company, and Mississippi River Fuel Corporation, was discussed in detail in Chapter X of this study.

In contrast with what has been a more or less general regulatory approach to this question, namely to slide over the question with a few perfunctory gestures towards considerations of this sort, most of these opinions go into considerable detail on the rate of return issue, and the rates allowed in individual cases. Moreover, in almost every instance, capital cost considerations have been cited in the discussions leading up to the rates of return allowed.

A list of these opinions is set forth in Table XVIII, on the preceding page. In this chapter, and the next one, it is proposed to undertake a brief examination of the rate of return sections of certain of these opinions for the light they throw upon the application of the principles developed in this study.

United Fuel Gas Company

The first of these post-1952 opinions to appear was one dealing with the rate increase application of United Fuel Gas Company, a wholly-owned subsidiary of The Columbia Gas System, Inc. This was Opinion No. 258, adopted July 31, 1953.

The Columbia system, consisting of ten companies, of which United Fuel Gas was one, conducted an integrated operation, by which it produced, transported and distributed gas; it also sold gas for resale to non-affiliated distribution companies.[1] Columbia's service area included portions of Ohio, Pennsylvania, New York, Maryland, West Virginia and Virginia. In pre-war days Columbia was able to supply system demands with gas produced and purchased in the Appalachian region. Since the war, due to rising demands, it had contracted for substantial quantities of "southwest" gas. This gas came by pipe line from Louisiana and Texas. United Fuel Gas was a key company in system operations by reason of the fact that it received and redistributed a good portion of the incoming gas.

Function of the holding company. - Financially speaking United Fuel Gas and its affiliated system subsidiaries were wholly dependent on Columbia, the holding company. Whenever any one of them needed capital funds they drew on Columbia's treasury, offering promissory notes

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[1]Atlantic Seaboard Corporation, another Columbia subsidiary, supplies Washington (D.C.) Gas Light Company.

and stock in exchange for cash. Columbia replenished its treasury from time to time by selling debentures and stock to the public.

Columbia's capital costs. - Because of this situation neither United Fuel Gas nor any of its affiliates had any securities outstanding in the hands of the public. Their investment credit was untested, and the problem of determining capital costs, preliminary to finding a fair rate of return, resolved itself into an analysis of the capital structure of the holding company, that is to say, Columbia itself.

Columbia's capital structure at the time of the hearing consisted of 54.5 per cent debt, and 45.5 per cent common equity. Debt was represented by three series of debentures, which had been sold to the public in 1950 and 1952. The weighted average cost of the debt capital, represented by these three issues, was 3 per cent. There was no preferred stock. The common stock was selling on the New York Stock Exchange at around 15, and was paying a dividend of 90 cents a share, annually.

Earnings, too, were around 90 cents a share, which meant that Columbia was paying out about all it was earning as dividends, a somewhat questionable practice. The earnings-price ratio was about 6 per cent. Over a period of years since 1948 it had averaged 7.6 per cent. On a strict cost-of-capital basis a rate of return of less than 6 per cent could have been justified. Nevertheless, the staff recommended 6 per cent, which would have provided a return of 9.6 per cent for the common equity, or 9.1 per cent after an allowance of $\frac{1}{2}$ of 1 per cent for financing costs.

Comparison of Allowances for Common - United Fuel Gas Co. case

Basis	Over all Rate of Return	*Allowance for Common	
		Nominal Return	Effective Return
**Cost of Capital	5.33%	8.1%	7.6%
Staff Recommendation	6.00%	9.6%	9.1%
Allowed by Commission	6.25%	10.1%	9.6%

*If a company is to be permitted to earn an effective return upon its common equity of, say, 9.6%, as in this instance, the return to be taken into consideration in fixing the over-all rate of return must be increased in some measure in reognition of the fact that the net proceeds received from the sale of a stock is invariably less than the actual selling price because of financing costs. This increased allowance is here described as the nominal return.

When working from "cost of capital" to "fair return" and the basis of cost of capital is an earnings-price ratio, the customary method of accomplishing this adjustment is to add 0.5% to the earnings-price ratio, as shown above. Similarly if the over-all rate of return fixed by a regulatory agency indicated a nominal return for the common equity of, say 10.1%, the effective return would then be obtained by subtracting this cost of financing adjustment.

Where stock is sold under rights the differential is often greater, due to the fact that the stock is usually priced under the market in the first place, in order to give the rights value.

** On the basis of a 5-year average earnings-price ratio of 7.6%

The Commission allowed United Fuel Gas a rate of return of 6¼ per cent. This was exceptional, because the Commission had been "holding the line" at 6 per cent for almost ten years.

Analyzed on a cost of capital basis 6¼ per cent was sufficient to allow a nominal return of 10.1 per cent on the common equity of Columbia,

or that portion of it which represented United Fuel Gas Company's jurisdictional business. The effective return, meaning the return after an adjustment for financing costs, was 9.6 per cent. This was about ½ of 1 per cent more than United Fuel, or Columbia, would have received had the Commission accepted the staff's recommended 6 per cent. (See comparisons in table on the preceding page.)

The Commission did not go into detail as to why it allowed more than its staff had recommended, or more than careful consideration of the record might have justified, except to remark than 6 per cent would have made "little or no allowance beyond the bare-bones cost of money to United Fuel and the Columbia system."[2]

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[2]F.P.C. Opinion No. 258, mimeographed edition, page 28A.

The Opinion went on to say:

> We have never held that our responsibility for determination of the fair rate of return can be discharged properly through the mere application of a strict cost-of-money formula to produce the minimum return which might be nonconfiscatory; rather we must exercise a fair and enlightened judgment having regard for all relevant facts.[3]

One of the facts which the Commission evidently considered relevant was prospective financing, for there were several references in the Opinion to "large and imminent" capital requirements. Evidently also, the Commission was impressed with Columbia's pleadings to the effect that it was endeavoring to maintain a "balanced" capital structure; that is to say, one in which debt and equity capital would be represented in approximately equal proportions. The Opinion observed, in laudatory terms, that Columbia has "resisted the lure of an undue thinning of the equity," and had "maintained a conservative capital structure." Of course, capital costs and, therefore, the needful rate of return, probably could have been lowered had Columbia increased its debt capital to 60 per cent, or higher.

Amortization of debt discount and expense. - One of the special issues taken up in this Opinion was the question of inclusion in the rate of return of an allowance to cover unamortized debt discount and expense on issues which had been previously retired. Some time prior to 1950 Columbia had undertaken a

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[3] Ibid., p. 29.

wholesale refunding of its debt securities, so that as of August, 1952, or so it claimed, there remained some $365,894 of unamortized premiums and expenses related to these retired issues which it felt it was entitled to recover through the permissible return, even though the amount involved had been charged off to earned surplus when the refunding operation was completed.

The Commission turned this down with the following remark:

> The cost of getting rid of uneconomic debt is little different from expenses resulting from unexpected disasters, fires, hurricanes, transmission line breaks or technological displacements, such as the substitution of natural gas for manufactured gas in a utility's distribution system. Such occurrences are among the risks inherent in the junior or equity stock position and they are properly chargeable against earned surplus as of the time they occur.[4]

Whether or not the Commission was on firm ground in so ruling is debatable. It could be argued that the refunding was for the ultimate benefit of the rate payers, and would not have been undertaken by management, representing the common stockholders had they expected that they would not be able to recover the costs.

Other Columbia System Subsidiaries

About a year after the United Fuel Gas Opinion was issued the Commission decided rate cases involving three other Columbia system subsidiaries. The companies involved were: Home Gas Company,

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[4] Ibid., page 26.

The Manufacturers Light and Heat Company, and the Ohio Fuel Gas Company.

There was nothing new or unusual in any of these Opinions. All three allowed 6¼ per cent on the basis of the cost of capital to Columbia. Opinion No. 272, adopted July 1, 1954, which dealt with Home and Manufacturers, took cognizance of flotation costs, something which Opinion No. 258 had omitted to do. It said:

> The cost of flotation experienced by Columbia in its common stock offerings in recent years suggests that an allowance on the order of one-half a per cent should be added to the earnings market price requirements.[5]

In the matter of rate of return Opinion No. 273, adopted July 26, 1954, in the matter of The Ohio Fuel Gas Company, merely said:

> For reasons stated in the Home Gas Company case, Opinion No. 272, we conclude that a 6¼% rate of return for Ohio Fuel is just and reasonable.[6]

Even though the Commission did not tie the rate of return down to capital costs in these Opinions, it is evident that such costs were, nevertheless, prime factors influencing the choice of the rate of return allowed. The Commission's decision to give basic consideration to the capital structure and capital costs of the holding company, rather than to the companies immediately concerned in the rate proceedings, is perhaps the most significant feature of all.

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[5] F. P. C. Opinion No. 272, page 9.

[6] F. P. C. Opinion No. 273, page 9.

Hope Natural Gas Company

A presiding examiner's decision rendered in 1954, in the matter of the rate increase application of Hope Natural Gas Company, is of interest for several reasons.[7] One is that it followed the lead of Opinion No. 258, in the matter of United Fuel Gas Company, just discussed, in referring matters of capital cost to the holding company. Another is the historical one, that Hope was the natural gas company immediately concerned in the 1944 decision of the United States Supreme Court, which put the fair rate of return issue in a new light, judically. This decision has already been reviewed in Chapter VII.

The holding company referred to was Consolidated Natural Gas Company. It had taken over control of Hope Natural, East Ohio Gas and their affiliates in 1943 when Standard Oil Company (New Jersey) was forced to relinquish them because of the Public Utility Holding Company Act. Consolidated was, in every technical sense, a publicly owned company. Its debt securities had been sold publicly, at competitive bidding, and its stock (which had been distributed to Standard Oil stockholders as a special dividend) was listed for trading on the New York Stock Exchange.

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[7]Presiding examiners are officers designated by a commission to preside at hearings. They usually render an intermediate decision which may or may not be adopted by the Commission.

Issues. - Matters at issue in the 1954 proceedings included rate of return, and the amount of Federal income taxes to be included in the cost of service. The latter is outside the scope of this study.

Rate of return. - In the matter of rate of return Hope insisted that it be allowed 6-3/4 per cent. In this connection it is, perhaps, of interest to recall that when the first Hope case was decided by the Federal Power Commission in 1942 the rate of return allowed was 6½ per cent. This was the case which ended up in the Supreme Court. In a subsequent rate case, decided in 1950, Hope's rate of return had been cut to 6 per cent.[8]

Risks. - Hope endeavored to substantiate its claim to 6-3/4 per cent by referring to the heavy commitments it had made in order to obtain a supply of "southwest" gas for its territory; to the heavy industrial and house heating loads which it was carrying, to the provisions which it was making for the storage of gas,[9] and to the warmer weather which was being experienced in its territory.

Capital structure. - The consolidated capital structure of Consolidated Natural, which was the only company of the group which

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[8]Decision of the Presiding Examiner in F.P.C. Docket No. G-1292, issued August 10, 1951.

[9]By storing gas in exhausted fields in the Appalachian region, Hope was able to take gas on a full load factor basis during the summer months, and have it available to meet winter peaks.

had any securities outstanding in the hands of the public, was arranged as follows:

Debt securities	37%
Common stock and surplus	63
Total capitalization	100%

This capital structure was unusual, in that common equity, rather than debt, predominated. This meant, for one thing, that while the common stock held a greater equity in the properties, it was lacking in leverage; that is to say the profits to be realized from the employment of a larger proportion of relatively low cost debt capital.

Debt securities in the capital structure consisted of four issues of debentures. The weighted average cost of debt capital was 3.04 per cent. Equity securities consisted of 3,683,285 common shares. Between 1948 and 1953 these shares had sold on the New York Stock Exchange on an earnings-price ratio basis which had ranged from a high of 10.1 per cent (in 1951) to a low of 7.6 per cent (in 1953); over this interval the earnings-price ratios had averaged 9 per cent.

Rights offering. - During 1952 Consoliated had offered additional common shares to its stockholders on a 1-for-18 basis at 52 . This was a 9.7 per cent earnings-offering price ratio basis; the earnings-net proceeds basis was 10.8 per cent. The over-all rate of return necessary on the basis of this offering would have been 7.9 per cent (see table on the next page).

Cost of capital. - By strict application of the capitalization percentages, shown above, using 3 per cent as the cost of debt capital,

Comparison of Allowances for Common - Hope Natural Gas Co. case

Basis	Over all Rate of Return	Allowance for Common Nominal Return	Allowance for Common Effective Return
*Cost of Capital	7.41%	10.0%	9.5%
Rights Offering in 1952	7.90%	10.8%	9.7%
Requested by Company	6.75%	9.0%	8.5%
Allowed in Decision	6.25%	8.2%	7.7%

*Using a 5-year average earnings-price ratio of 9.5% for Consolidated Natural Gas Company common stock.

9 per cent as the nominal cosy of equity capital (which would have meant 8.5 per cent, after adjustment for financing) the 6-3/4 per cent rate of return claimed by Hope might have been justified. However, the Examiner refused to accept Hope's claims at their face value. The capital structure, he said, was more conservative than it needed to be. "The evidence is persuasive," the decision said, "that Consolidated could probably increase the proportion of the relatively less expensive debt capital employed without materially affecting its ability to borrow capital at low rates."

Nor was he impressed with Hope's arguments about increased risks, for he countered them by pointing out the favorable market areas served by Hope and its affiliates. They were, he said, part of the normal hazards of the natural gas business. No additional return was justified on their account.

Rate of return allowed. - After considering all these possibilities, and possibly others, the Examiner concluded that a $6\frac{1}{4}$ per cent rate of return would be "fair, reasonable and equitable, and would provide Consolidated with an additional incentive over and above bare capital costs so that it could continue to serve the public efficiently, and at reasonable rates." The basis of choice was not further explained, and there was no cost of capital calculation, such as had featured other decisions or opinions. As shown by the table on the preceding page, such a return would provide a nominal return of 8.2 per cent for the common equity of Consolidated, or 7.7 percent after an allowance for financing costs. The allowance was not as generous as the earnings-price ratios indicated was necessary, but the Examiner observed that the situation in this respect was somewhat of the company's own making, because of its conservative dividend policy and could thus be corrected.

The examiner's decision was adopted by the Commission about a month after it was issued. It was not further challenged by Hope.

Natural Gas Pipeline Company of America
Texas Illinois Natural Gas Pipeline Company

Two other companies whose rate increase applications have been disposed of since 1952 are: Natural Gas Pipeline Company of America, and Texas Illinois Natural Gas Pipeline Company. Both are subsidiaries of The Peoples Gas Light and Coke Company, the distribution company serving Chicago. Peoples Gas owns all of the stock of Natural Gas Pipeline Company and about 80 per cent of the outstanding common stock of Texas Illi-

nois. When organized, about 1930, Natural Gas Pipeline Company was hailed as the first company to build a pipe line 1,000 miles or more in length. Texas Illinois had been organized later. Peoples Gas was the principal customer of both companies. Both companies also furnished gas to other companies in the Chicago metropolitan area.

Both companies had been privately financed under Peoples Gas auspices with debt and common equity capital. However, Texas Illinois also had some preferred stock outstanding, and some of its common stock had found its way into the hands of the public.

In rate cases which were heard during 1954 both companies were allowed 6 per cent. While this did not provide generously for the common equity of either, the Commission reasoned that because of their "sheltered positions" as subsidiaries of Peoples Gas Light and Coke Company risks were minimized and larger returns were not necessary. There is little that is significant in either opinion, except that in prescribing 6 per cent as an appropriate rate of return for Natural Gas Pipeline Company the Commission overruled a presiding examiner who sought to give consideration to something other than the actual capital structure of that company and the "anticipated" cost of debt capital, rather than the actual cost thereof.

CHAPTER XIX

OPINIONS ISSUED AFTER 1952 INVOLVING RATE OF RETURN FOR NATURAL GAS PIPE LINE COMPANIES - Continued

Certain other opinions of the Federal Power Commission are regarded as significant because of their approach to the fair rate of return issue via the cost of capital route.

Panhandle Eastern Pipe Line Company

One of these involved Panhandle Eastern Pipe Line Company, another "old line" natural gas pipe line company, which had been organized as early as 1929. At the time of its formation, as later, its principal objective had been to bring gas to Michigan from the Hugoton fields, of Kansas, and the Texas Panhandle fields. In 1952, when it applied for rate relief, it was the principal supplier of Michigan Consolidated Gas Company, serving Detroit, and Consumers Power Company, serving the rest of Michigan. It also sold gas to utilities serving communities in Ohio, Indiana, Illinois and Michigan.

Panhandle Eastern was also the owner of substantial gas reserves. At the end of 1952 the reserves which it owned were estimated at two trillion cubic feet; it also controlled an additional 7.5 trillion cubic feet under contract with numerous independent producers and other suppliers. Much of the owned reserves had been acquired in the early years of the company's history when gas was abundant and leases were cheap. They thus constituted an important source of potential profit. They

were also to catch the eye of investors seeking hedges against inflation. In 1949 some of the owned gas reserves had been transferred to Hugoton Production Company, a subsidiary of Panhandle, and the stock of Hugoton Production was then distributed to the stockholders of Panhandle as a dividend.

Capitalization. - The capitalization of Panhandle as of December 31, 1951 was arranged as follows:

	Amount	Per cent
Debt capital	$125,000,000	65.7
Preferred stock capital	13,262,500	7.0
Common stock and surplus	51,984,000	27.3
Total capitalization	$190,246,000	100.0

Debt securities were represented by several serial and sinking fund debentures, carrying low coupon rates. The average cost of this debt was 2.90 per cent. The preferred stock was represented by a single 4 per cent issue; the cost rate was 4.02 percent. There were about 3,379,000 shares of common stock outstanding. The shares were listed for trading on the New York Stock Exchange. The company had enjoyed a long period of prosperity, during which it had paid good dividends.

Recommended and claimed returns. - In the matter of rate of return Panhandle claimed that the return on its common equity should be 12 percent, and actually put in for a rate of return of 6½ per cent, which would mean about 14.5 per cent for the common equity, on the basis of the above calculation.

Comparison of Allowances for Common - Panhandle Eastern case

Basis	Over all Rate of Return	Allowance for Common Nominal Return	Allowance for Common Effective Return
*Cost of capital	4.50%	8.4%	7.9%
Company's request	6.50%	14.9%	14.4%
Staff and City of Detroit recommendation	5.50%	10.6%	10.1%
Allowed by Opinion No. 269	5.75%	11.4%	10.9%

*On the basis of a 6-year average earnings-price ratio for Panhandle Common stock of 7.9%

The staff of the Commission, and the City of Detroit, which intervened in the proceedings, recommended 5.50%. On a strict cost of capital basis, taking into account average earnings-price ratios for Panhandle common stock over a 6½-year interval, 4.50 per cent should have been all that was necessary. This would have permitted an effective return to the common equity of 7.9 per cent (see table above).

Allowed rate. - Opinion No. 269, issued by the Federal Power Commission April 15, 1954, allowed Panhandle 5.75 per cent. The Commission ruled, as it had continued to do, that the historic cost of debt capital, and of preferred stock capital were "proper measures of the cost of borrowed money and of preferred stock funds in bearing upon a fair rate of return for Panhandle." Such over-all rate was to allow a net effective return upon the common equity of 10.9 per cent. Even this was in excess of that suggested by the 6½-year average earnings-

price ratios for Panhandle stock, or the 6½-year average for the Federal Power Commission's 8-stock earnings-price ratio composite.[1]

Position of Panhandle's common stock. - Panhandle's need for a higher rate of return than the one allowed might have been easier to establish, had it not been for the popularity which the stock seemed to be enjoying with investors. It had, for a time, sold on an earnings-price ratio basis which was distinctly below the prevailing rate for most other pipe line stocks. It was also selling at about 4½ times its book value. Much of this was attributed to Panhandle's ownership of substantial gas reserves. This point has already been mentioned.

Witnesses for Panhandle claimed that if these reserves were not considered the market price for the common would have been less, and the earnings-price ratios correspondingly greater than those which had been registered. Their efforts to establish this point were only partially successful. The Commission said that it was aware that speculation, engendered by the ownership of gas reserves, had resulted in higher market prices for Panhandle's shares, than it had produced in the case of companies which were otherwise situated. However it said that it did not considered that adjustments for this state ofaffairs could be made mathematically, as Panhandle witnesses had attempted to do.

In coming to the conclusion that 5.75 per cent was an adequate rate of return the Commission discussed the history of the en-

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[1]See Table XVI, p. 190.

terprise, Panhandle's position in the industry, its gas reserves, earnings-price ratios, and the return, averaging 23.7 per cent, which it had averaged on the book value of its stock. There seemed to be a brisk demand among investors for Panhandle's stock; the company was obviously able to borrow money at low rates. The success of the venture was all against it.

The discussion concluded with the following statement:

> In the final analysis, the determination of a fair rate of return is a matter of informed judgement based on our consideration of numerous known and predictable elements dealt with in the evidence of record. In keeping with the foregoing we conclude that a rate of return of 5-3/4% is fair, reasonable and adequate for Panhandle in this proceeding.
>
> This rate of return . . . will service the outstanding debt and preferred stock and permit a return of 11.41% on the common equity associated with the jurisdictional plant and business. This rate, which compares favorably with that allowed on the common equity of several other natural-gas companies in recent cases, in our opinion is here justified by the differences in capital structure. A rate of return of 5-3/4% is sufficiently high to take care of the shortcomings of earnings-price ratios affected by ownership of natural-gas reserves as well as contingencies.[2]

A footnote to the above quotations set forth a cost of capital calculation which, in abbreviated form, is as follows:

Debt	60.7%	@	2.90%	=	1.76%
Preferred stock	6.7%	@	4.02%	=	.27
Common equity	32.6%	@	11.41%	=	3.72
	100.0%				5.75%

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[2]F.P.C. Opinion No. 269, In the Matters of Panhandle Eastern Pipe Line Company, et al, mimeographed edition, page 77.

Allowances associated with the redemption of retired issues. - In the Panhandle opinion the Commission also took occasion to reiterate and affirm the stand which it had taken in the United Fuel Gas case, against including in the rate of return an allowance intended to permit recovery of discount and expenses associated with retired issues.[3] It said that its attitude towards these charges would be the same in reverse circumstances, i.e., had the company secured a windfall profit through disposition of an asset for more than its depreciated book value. The Commission also asserted, with what seemed to be a degree of complacency, that the charge-off to surplus of $7,777,786 of unamortized debt discount and expense, and call premiums which Panhandle had sought to recover, had worked no hardship of its stockholders, who had been well rewarded in other ways.[4]

Fair field price. - The Panhandle opinion, presently under discussion, is of additional interest because of the adoption therein of the principle of "fair field price." This issue has little to do with rate of return; actually it affects another element of the cost of service. However, because it has become a sort of regulatory cause celebre, it seems worthwhile to devote a few lines to it here.

Fair field price is a method of accounting for gas drawn from company owned properties for rate making purposes. What it does,

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[3]See also under the dicsussion of the United Fuel Gas Company opinion at page 212 supra.

[4]Opinion No. 269, p. 70.

or attempted to do, was to permit such companies to reckon their self-produced gas into their cost of service estimate for rate-making purposes as if that gas had been purchased outside the system, from independent producers.

The price at which such gas would be taken into cost of service would be the going competitive price for gas in the field, hence the expression "fair field price." The alternative method is to include the cost of producing such gas in cost of service, plus a return on the capital investment in the producing properties. Necessarily where fair field price is allowed, production costs are not included in cost of service, and the net investment value of the producing properties would be deducted from the rate base.

One thing fair field price was supposed to accomplish was to encourage pipe line companies to explore for more gas, something they might otherwise omit to do, if they were only allowed to recover production costs plus taxes and return.

Though Opinion No. 269 was welcomed by the pipe line companies as a realistic approach to one of their chief problems, it was challenged by the City of Detroit and Wayne County, Michigan, representing consumers. This challenge was upheld in the Circuit Court of Appeals which ruled, in effect, that it was all right to consider the field price of gas, but production costs could not be ignored.[5] As the United States Supreme Court has recently refused

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[5] 230 F.2d 810.

to review the Circuit Court's decision, the fair field price doctrine seems a dead issue, at least for the present.

The rate of return of 5-3/4 per cent allowed Panhandle in the basic Opinion was not challenged by the company, or any of the intervenors, and was not at issue in the court proceedings.

El Paso Natural Gas Company

El Paso Natural Gas Company was another of the pre-depression pipe line companies the rate increase applications of which have been decided by the Federal Power Commission since 1952. The company's principal business is to gather natural gas in the Texas Panhandle, and in the Permian and San Juan Basins, and transport it westward for sale to a limited number of public utility customers and industrial concerns in Texas, Arizona and New Mexico. It has the further distinction of being the chief source of out-of-state gas for the two most important California distributors, namely Pacific Gas & Electric Company, serving the Bay area, and the two Paficic Lighting Corporation subsidiaries which serve southern California.

El Paso has recently added to its responsibilities by acquiring stock control of Pacific Northwest Pipeline Corporation, now serving the Pacific northwest states, and having connections with Canadian outlets and sources of gas. However this latter undertaking did not figure in the 1952 proceedings.

During 1952 El Paso filed an application for gas rate increases with the Federal Power Commission. The new rate schedule was immediately suspended, and hearings were held the following year. The case was decided by Opinion No. 278, issued during November, 1954.

Capital structure. - El Paso's capital structure as of August 31, 1953, consisted of the following:

	Amount	Per cent
Long-term debt	$354,571,000	68
Preferred stock	65,548,000	13
Common stock and surplus	100,622,000	19
Total	$520,741,000	100

As will be noted from the foregoing, El Paso was operating on a relatively thin equity. Additionally, the capitalization was exceptional because of the number and variety of the security issues outstanding. There were, for example, seven series of mortgage bonds outstanding, with coupon rates ranging from 3 per cent upward to 4-1/8 per cent. There were also three series of debentures, with coupon rates of 3 per cent, 3¼ per cent, and 4-5/8 per cent. The weighted average cost of all debt capital was 3.76 per cent.

There were also five issues of preferred stock, with dividend rates ranging from 4.1 per cent, upward to 5.65 per cent. There were also four issues of convertible second preferred stock, having various dividend rates. The weighted average cost of all preferred stock capital was 5.29 per cent.

The common equity was represented by 4,439,989 $5 par value shares. The shares were listed for trading on the New York Stock Ex-

change. Dividends were being paid at the rate of $1.60 per share annually; the payout rate was about 50 per cent.

No other prominent pipe line company had such a wide variety of securities outstanding. No other company seemed to be operating with such a slim equity. The financing pattern, as well as other aspects of the company's affairs, reflected dyanmic growth.

Current costs rejected. - For the purposes of determining a fair rate of return the Commission was urged to take into consideration "current conditions" in the securities market. Current conditions, so it appeared, meant taking into account high interest rates on bonds and debentures sold during the period of temporary stringency in the money market, which occurred during that year. The Commission refused to accede to this request, and in so doing reaffirmed its determination to stick to historic experience in the matter of debt and preferred stock capital costs.

Claimed rate of return. - In conjunction with its claim for a rate of return of 6½ per cent, El Paso contended that a fair return for equity capital would be 12½ per cent. Investors' requirements, it said, were 11-3/4 per cent, and the financing adjustment should be 3/4 of 1 per cent. It sought to justify this claim by

> Computations designed to measure, and to eliminate from the market price [of the common stock] that portion which is claimed to be attributable to unrealized future earnings and unmatured future prospects, such as those which may result from ownership of natural gas reserves. (Opinion No. 278, mimeographed edition, page 35)

Earnings-price ratios. - In rejecting this request the Commission launched forth into a recital of earnings-price ratios for natural gas pipe line companies in general, and El Paso in particular, which it held to be the only worthwhile evidence of investor's appraisals.

El Paso common, it appeared from the record, had been selling on an average earnings-price ratio basis of 8.9 per cent, going back to 1946 (a matter of 6 years), and on an 8.5 per cent basis during 1952.

An 8-stock composite earnings-price ratio, on which the Commission had frequently relied, displayed a 6-year average indication of the cost of equity capital of 7.1 per cent.

Using the latter figure as the cost of equity capital, with an adjustment for financing costs, an over-all rate of return of as little as 4.7 per cent could be justified. Using the 8.9 per cent figure, with an adjustment, a 5 per cent over-all rate of return could have been justified (see table on following page).

Stock offerings. - Since 1946 three offerings of additional shares of common stock had been made to the stockholders of El Paso via rights. The latest of these had been made during March, 1953, or right around the time of the hearings. It had been made on an 8.1 per cent earnings-market price ratio basis, or a 9.3 per cent earnings-net proceeds basis. Such spreads were characteristic of rights offerings, in contrast with the narrower spreads usually

Comparison of Allowances for Common - El Paso Natural Gas case

Basis	Over all Rate of Return	Allowance for Common	
		Nominal Return	Effective Return
El Paso's claim	6.50%	17.1%	16.6%
Staff recommendation	5.50%	11.8%	11.3%
Cost of capital, based on			
8-stock average earns.-pr. ratio	4.70%	7.6%	7.1%
El Paso Natural ave. earns.-price ratio	5.00%	9.4%	8.9%
1953 Rights offering	5.00%	9.3%	8.1%
Allowed by Opinion No. 278	6.00%	14.5%	14.0%

experienced in connection with public offerings of stock (see Tables X and XI). To supply the 9.3 per cent effective allowance for the common indicated by the terms of this latest offering an over-all rate of return of 5 per cent would have sufficed (see table above).

Rate of return allowed. - Notwithstanding these various valid excuses for keeping the over-all rate of return of El Paso at a relatively low level the Commission was evidently determined to be generous, for it proceeded to allow an over-all rate of 6 per cent. When analyzed on a cost of capital basis, taking into account historic cost of debt capital and preferred stock capital, it resulted in a return to common equity of 14.5 per cent before any allowance for financing costs, or 14 per cent thereafter.

The Commission may have been struck with its own generosity, for it concluded the discussion of rate of return in Opinion No. 278 with the following statement:

> The rate of return which we herein allow to El Paso should permit and encourage it to make further improvement in its capital structure. We have observed that the allowance of a similar rate of return to other companies in recent rate cases has enabled them to issue additional securities, as required, on most favorable terms.[6]

Michigan Wisconsin Pipe Line Company

The Michigan Wisconsin Pipe Line Company rate case, which was decided by Federal Power Commission Opinion No. 275, adopted July 28, 1954, could have been described as a classic application of cost of capital to rate of return determination, had it not been for the fact that in this instance the Commission departed from its usual practice of adhering to actual capital structures and resolved the rate of return issue on the basis of a capital structure which never materialized.

Michigan Wisconsin is a subsidiary of American Natural Gas Company. Two other subsidiaries of American Natural, which are supplied with gas brought up from the Hugoton Field by Michigan Wisconsin, distribute gas in Detroit and Milwaukee.

At the time of the hearings upon its rate increase application Michigan Wisconsin was employing long-term debt capital of $83,240,000, and common equity capital of $30,927,000. The debt capital

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[6] Loc. cit., p.38.

consisted of $63,240,000 of First Mortgage 3-5/8% bonds, which had been sold privately, to two insurance companies. The historic cost of this item of debt capital was 3.68 per cent. Debt capital also included $20,000,000 of 3% bank loans. These loans had been taken out in 1950, originally, but they had been renewed so often that they seemed to constitute part of the company's permanent capital. The entire common equity was owned by American Natural Gas Company.

On this basis the capitalization of the company was apportioned as follows:

Long-term debt	72.9%
Common stock and surplus	27.1
Total	100.0%

Recommended return. - The Staff of the Commission recommended that Michigan Wisconsin be allowed a 5.75 per cent rate of return, over-all, and pointed out that on the basis of the above capital structure, and assuming 3.57 per cent as the cost of all debt capital, this would result in a return to the common equity of about 11.6 per cent before, and 11.1 per cent after, an adjustment for financing costs.

Michigan Wisconsin's claim. - Michigan Wisconsin represented to the Commission that it was on the verge of replacing the $20,000,000 of bank loans with $15,000,000 of 5½% preferred stock, and $5,000,000 of common. On this basis (and with some adjustments) the capital structure, pro forma, would have been as shown at the top of the following page.

Pro forma Capitalization of Michigan Wisconsin Pipe Line Company

Giving effect to the replacement of $20,000,000 short-term debt with preferred and common stock

	Amount	Per cent
Long-term debt	$ 63,240,000	55.4
5½% Preferred stock	15,000,000	13.1
Common equity, as adjusted	35,927,000	31.5
	$114,167,000	100.0

Return to equity. - On the basis of the capitalization shown above the 5.75 per cent over-all return, recommended by the Commission staff, would have resulted in a return to the common equity of only 9.5 per cent, before financing costs, or 9 per cent after adjustment for financing costs. Thus:

55.4%	@	3.68%	=	2.03%
13.1	@	5.50	=	0.72
31.5	@	9.50	=	3.00
100.0%			=	5.75%

Michigan Wisconsin was evidently successful in convincing the Commission that 9 per cent for the common equity was not enough. On the strength of its representations that it would shortly be replacing the $20,000,000 of bank loans with more expensive preferred stock capital, and common stock capital (with the effect shown above), the Commission allowed 6 per cent. This would have raised the return to common equity from 9.5 per cent, to 10.3 per cent. This was a not unreasonable allowance, judging from some of the Commission's previous actions.

The "joker" in the situation was that Michigan Wisconsin never did put any such plan of financing into effect. Instead it temporized, and delayed, and in the end decided to pay off a part of these notes, instead of funding them. Meanwhile it enjoyed the 12.5 per cent return on the equity which the 6 per cent rate of return permitted, on the basis of its old capitalization. Thus:

72.9%	@	3.57%	=	2.60%
27.1	@	12.50	=	3.40
100.0%				6.00%

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The foregoing concludes the present examination of recent Federal Power Commission opinions in natural gas pipe line company cases. A final decision on the part of the Commission as to whether or not to accept the 6½ per cent rate of return allowed by one of its hearing examiners in the Olin Gas Transmission Corporation rate case was still pending when this study reached the present stage. It will be of interest because Olin was a company without debt; whatever return is allowed becomes, ipso facto, the entire return for the common equity. Is 6½ per cent adequate in the light of prevailing stock market capitalizations of natural gas pipe line company returns ?

An illuminating discussion of the Commission's findings in the matter of South Carolina Generating Company, an interstate purveyor of electrical energy, will be found in the Appendix.

CHAPTER XX

SUMMARY AND CONCLUSIONS

In the many pages of this study which have gone before the author has been exploring the proposition that a fair rate of return for a regulated public service company can be determined can be determined by combining certain accouting, statistical and financial data in accordance with certain principles set forth in Chapter XIV hereof and there described as the "cost of capital formula." A field for this study has been found in numerous recent decisions of the Federal Power Commission, a regulatory agency of the United States government which is charged, among other things, with responsibility for regulating the rates fixed by natural gas pipe line companies. The Federal Power Commission has been employing the cost of capital in its efforts to fix a fair rate of return for such companies since 1952. The question posed is whether or not the rate of return determined by this method is fair and equitable and satisfies economic, legal and political concepts of what a fair rate of return should be and do.

This study has had little to say concerning the political concepts of fair return. The author considers that political influences and concepts ultimately make themselves felt in the form of legislation and the attitudes of regulatory agencies. Eventually, of course,legislation submits to judicial review.

The principal function of the return according to most of the eminent economists consulted is to reimburse capital; indeed it is sometimes referred to as the wages of capital. The author considers that this does not go far enough and is inclined to accept the views of Dr. Glaeser to the effect that from an economic standpoint a fair return is one which will attract capital into the business and hold it there. The difference between attraction and mere reimbursement is of considerable significance; it is a difference for which appropriate allowances can be made as of a given moment, and on the basis of current experience, but not without the exercise of a certain amount of judgment.

At this point it may be pertinent to repeat that in almost every other line of business other than a regulated public service business the return which will accomplish this economic end is more or less automatically established by the free play of economic forces. If a business is successful it will attract capital; if it is not successful capital will go elsewhere. The question of fairness does not intrude. In the public utility business, on the other hand, competition is absent and the fixing of a rate of return is one of the principal tasks of the regulatory agency. To be fair it must be fixed with due regard for the interests of the consumer of the services rendered, the investor who provides the utility company with its capital, and the community at large.

The author is not a lawyer and may, therefore, speculate freely concerning the probable fate of the cost of capital doctrine at the hands of the courts. The judicial process is notoriously slow; it may be years before cost of capital as a means of fair rate of return determination will be examined on its merits by the United States Supreme Court, and an opinion rendered thereon.

Certain Courts of Appeals have had an opportunity to examine the issue in the Colorado Interstate and Panhandle Eastern opinions, discussed in Chapters X and XIX, respectively. In neither instance did the Court take exception to the Commission's findings in the matter of rate of return although in the former instance it hinted that it found the return allowed (5-3/4%) rather low.

Exercising his layman's prerogative the writer guesses that the Federal courts will ultimately welcome cost of capital as a means of determining fair return and will uphold any regulatory agency which applies it to this purpose with consistency and logic. Judges are also human and it seems reasonable to expect that they will be wholly agreeable to this method of rationalizing what has heretofore been a difficult judgment issue.

Concerning the general proposition, to the effect that a fair return can be developed from capital costs by application of techniques such as have been illustrated, the author is optimistic, although it is his opinion also that the techniques require considerable refinement.

At the present time these techniques emphasize three principal factors. These are: the historic cost of senior capital (bonds, debentures and preferred stocks), the ratios in which each class of capital appears in the capital structure of the enterprise immediately concerned, and earnings-price ratios which are considered to be significant of the cost of common stock capital. Major or minor consideration is sometimes given dividend payments, depending upon whether or not the regulatory agency which has to make the decision considers earnings or the dividends paid out of earnings to have the greater significance. Everything relates to the past; little concern is shown for the future.

While future capital costs seem to have made little difference at the time the Federal Power Commission was considering fair rate of return for the companies named in his study, by reason of the abundance of capital then available, conditions have changed. It is a matter of common knowledge that the next sizable segment of capital which any public utility procures is going to cost considerably more than that which it already has committed to its business. This prospect is certainly as deserving of immediate consideration as is the possibility that capital committed can sometimes be replaced at lower cost, when the trend is downward.

Again the technique of utilizing earnings-price ratios as measures of common stock capital costs, or "appropriate allowances for the common equity," as it is sometimes called appears to be deserving of extensive study in an effort to evaluate the influence of the

many non-statistical factors which have a bearing in this area. What happens to the "formula" when the company concerned in a rate proceeding has an all-common-stock capital structure ? At the other end of the scale, what is to be done when the company has 90 per cent of senior capital ? What, exactly, is the effect of high or low payout ? What is to be done when the common stock of a company is closely held, and there is no objective measure of common stock capital costs ?

Again there would seem to be a need for arriving at some standard concept as to what constitutes a "representative period of time" for the consideration of earnings-price ratios. Perhaps this would be the biblical, mystical seven. What weight should be given to a company's own earnings-price ratios, and what weight should be given to industry earnings-price ratios, such as are illustrated in Tables XVI and XVII ?

There seems to be no doubt but what the cost of capital approach has been a useful tool in the determination of appropriate rates of return for natural gas companies. Nevertheless it is beginning to seem curious how, after giving solemn consideration to these many factors, purporting to represent the cost of capital, the return finally deduced turns out to be the traditional six per cent ! Unless further research is undertaken, in an effort further to narrow the area of judgment, cost of capital may turn out to be merely a transient influence in the matter of rate of return.

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APPENDIX

APPENDIX A

Photostat copy of the article concerning Northern Natural Gas Company which appeared in The Outlook for September 2, 1952, and which precipitated the controversy over the cost of capital approach to fair rate of return.

See Chapter XI.

NEW RATE POLICY CLOUDS GAS OUTLOOK

FPC Adopts Cost of Money as Major Factor in Determining Natural Gas Rate Structure—Formula Restricts Industry Earnings Potentialities

• • •

THE recent FPC rate case decisions in respect to NORTHERN NATURAL GAS and COLORADO INTERSTATE GAS indicate the adoption by the FPC of an entirely new policy in determining rate structures. The Commission has apparently thrown overboard the generally accepted principle of a 6% overall return on net property and has come out with a new "cost of money" formula as the sole yardstick. The FPC applied this principle to cost of money raised through all types of securities.

In the case of NORTHERN NATURAL, the Commission broke down this cost of money into 2.55% interest on the company's debt, which amounted to 56% of capitalization, and this figure was all it would allow as a rate of return on that part of the capitalization. As indicated in the COLORADO INTERSTATE decision, the same procedure with respect to allowable return is to be followed in the case of preferred stock financing.

The cost of common stock money was determined by taking the average "earnings-price" ratio for seven natural gas companies from 1946 to the conclusion of the hearings in 1951, and their average yield for the period and as of the end of the period, with consideration given to the earnings pay-out. The same figures were compiled for four companies "relied on by Northern as indicative of investor requirements." Finally, the same set of figures was calculated for Northern Natural itself.

	Earnings-Price Ratio 1946 to Close of Hearings	April 30, 1951	— Dividend Yield and Pay-out — 1946-1951		Yield at April 30, 1951
7 Companies	8.1%	7.5%	5.1%	57.5%	5.3%
4 Companies	8.5%	7.3%	5.3%	59.1%	5.2%
Northern Natural	....	....	5.6%	62.7%	5.1%

The report then stated that a 5½% rate of return on the allowable rate base would provide a return of 8.75% on Northern's common stock, after allowance of ½% to cover the cost of financing, and 9.25% before such cost. The breakdown of this 5.50% return is

56% bonds x 2.55% interest cost	1.43%
44% common equity x 9.25% return	4.07%
Total	5.50%

Further, the Commission stated that "An 8.75% allowance for common equity, with a 62.7% pay-out, will result in a yield of 5.49%, which is in excess of average yields of the seven companies since 1945."

Would Affect Market Movements

This cost of money theory applied to rates ties in FPC findings with the market price of natural gas equities and conditions in the money market. If carried to its ultimate conclusion, it would tend to limit market movements of natural gas equities. Through limiting the rate of return on borrowed money to its interest cost, the leverage factor is eliminated from the common equities, thus detracting from the appreciation possibilities of common stocks of companies with relatively heavy debt ratios.

Also, a definite ceiling is put on per share earnings potentialities. A rise in the market price of the equity would lower the "earnings-price" ratio, and thus place the company in a vulnerable position with respect to its rate structure. Contrariwise, a break in its market price would open the door for the company to apply to the FPC for higher rates. Thus, both earnings per share and market price become

criteria in rate structures and in problems of raising new money.

The growth factor, so far as it could be reflected in per share earnings of natural gas common stocks, would largely be eliminated. The FPC would be placing both a ceiling and a floor in restricting the range of market fluctuations. If such a policy were allowed to persist indefinitely, the Commission would succeed largely in eliminating appreciation prospects of natural gas equities, in establishing impossible rate-making problems, and in hog-tying the natural gas industry in its all-important task of raising new capital to finance the vast expansion program. From the practical standpoint, the time lag with which the industry has been plagued in the past under FPC delays in granting rate relief would be further complicated, and adjustments of rates promptly to rising costs would be made even more difficult than at present.

Possible Remedies

It is obvious that any effective remedy for the difficulties growing out of this 1952 model of FPC rate making must come through a fundamental change in Commission policy. This could emerge from (1) a significant change in the personnel of the Commission, (2) from relief secured by the natural gas companies through the courts, or (3) from Congressional legislation.

Company officials give us every assurance that the industry is not going to take this FPC development lying down. Indications are, however, that the industry has been caught off guard, and that the FPC has been picking off the companies one by one in dealing unreasonably with their problems. The industry will undoubtedly start its fight in the courts within a short time, and await political developments before launching a Washington offensive after the first of the year.

Vulnerability of Stocks

Meanwhile, the stock market will probably reason that there is at least some chance that the new departure in rate making may be permanent. To that extent, natural gas transmission stocks lose their "growth glamour" and tend to become pure investment vehicles. And to that extent they are vulnerable pricewise.

Companies most vulnerable are those with low ratios of common stock to total senior capitalization, such as TENNESSEE GAS TRANSMISSION, TEXAS EASTERN TRANSMISSION, EL PASO NATURAL GAS, *and* TRANSCONTINENTAL GAS PIPE LINE. *Companies least affected by the rate-making innovation are those with high common stock ratios, such as* CONSOLIDATED NATURAL GAS, *and those with a large proportion of industrial sales (exempt from FPC jurisdiction), among which are* SOUTHERN NATURAL GAS, UNITED GAS CORPORATION, *and* MISSISSIPPI RIVER FUEL. *Clients who hold issues of the first group as growth speculations might well accept their profit.*

APPENDIX B

STOCKS COMPRISING THE GROUPS SHOWN IN TABLE XVII

Pipe Line Companies - Group A - Stocks listed on stock exchanges

Name of Company	Exchange where listed
Consolidated Gas Utilities Corporation	American
El Paso Natural Gas Company	New York
Lone Star Gas Company	New York
* Mississippi River Fuel Corporation	New York
Mountain Fuel Supply Company	Pittsburgh
Northern Natural Gas Company	New York
Panhandle Eastern Pipe Line Company	New York
Southern Natural Gas Company	New York

* Since 1952 only.

Pipe Line Companies - Group B - Stocks traded Over-the-Counter

Colorado Interstate Gas Company
Tennessee Gas Transmission Company
Texas Gas Transmission Corporation
Texas Eastern Transmission Corporation
@ Texas Illinois Natural Gas Pipeline Company
Transcontinental Gas Pipe Line Corporation

Since 1953 only
@ Since 1954 only

Integrated Companies (Holding company systems)

American Natural Gas Company	New York
The Columbia Gas System, Inc.	New York
Consolidated Natural Gas Company	New York
National Fuel Gas Company	New York
Pacific Lighting Corporation	New York
United Gas Corporation	New York

APPENDIX C

Long-term record of the composite capitalization rates of eight natural gas pipe line companies used by the author in Federal Power Commission proceedings as indications of the cost of common equity capital for such companies.

This record is the basis for the values shown in the column headed "Pipe line companies, Group A" in Table XVII. The method of calculating a single monthly entry is shown in Appendix D.

EARNINGS-PRICE RATIOS OF UNLISTED COMMON STOCKS OF SIX NATURAL GAS COMPANIES 1/
JANUARY 1949 TO DATE

	1949	1950	1951	1952	1953	1954	1955	1956
January	7.6 2/	6.3	7.6	7.8	7.1	6.4	6.0	6.2
February	7.1 2/	6.0	8.0	7.8	6.9	6.5	5.8	6.8
March	7.3	6.0	8.4	7.3	6.5	6.9	6.0	6.7
April	7.0	6.3	8.9	7.1	6.8	6.6	5.9	7.3
May	7.5	6.4	10.0	6.8	6.8	6.6	6.0	
June	8.8	7.4	10.0	7.4	7.3	6.8	5.8	
July	8.5	9.0	9.5	7.3	6.9	6.7	5.8	
August	8.3	8.7	8.7	6.8	6.6	6.6	5.9	
September	7.5	8.1	8.8	7.9	7.0	6.3	5.8	
October	7.7	7.9	9.1	8.0	6.5	6.5	5.8	
November	7.0	8.7	8.9	7.0	6.8	6.8	5.7	
December	6.4	8.3	8.3	6.8	6.7	6.4	6.0	
Straight Average	7.6%	7.4%	8.9%	7.3%	6.8%	6.6%	5.9%	

Note: The above data are based on the closing market quotations at the end of the month and the latest available earnings for a twelve months period immediately preceding the particular month. Also, the earnings-price ratios are based on weighted figures.

Footnote: 1/ Tennessee Gas Transmission Company, Texas Eastern Transmission Corporation, and Texas Gas Transmission Corporation included from January 1949 through December 1952. Colorado Interstate Gas Company and Transcontinental Gas Pipe Line Corporation added January 1953. Texas Illinois Natural Gas Pipeline Co. added January, 1954.
2/ Excluding Texas Eastern Transmission Corporation.

Source of Data: Standard & Poor's Stock Guide and Moody's Cumulative Supplements.

APPENDIX D

Method of calculating a monthly, composite capitlization rate (earnings-price ratio) appearing in the table shown in Appendix C.

EARNINGS-PRICE RATIOS, YIELDS, AND PAYOUTS ON 11

EIGHT NATURAL GAS COMPANY COMMON STOCKS

APRIL 30, 1956

Company (a)	No. Shares Outstanding (000) (b)	Market Price 4/30/56 (c)	Market Price Total (000) (d)	Earnings 12 Mos. Ended (e)	Earnings Per Share (f)	Earnings Total (000) (g)	E.P.R. (h)	Div. Rate (i)	Yield (j)	Payout (k)
Cons. Gas Utilities Corp.	886	$14.00	$ 12,404	1/31/56	$1.36	$ 1,205	9.7%	$0.75	5.4%	55.1%
El Paso Natural Gas Co.	4,968	48.75	242,190	12/31/55	3.08	15,301	6.3	2.00	4.1	64.9
Lone Star Gas Company	5,521	30.50	168,391	12/31/55	2.14	11,815	7.0	1.60	5.2	74.8
Miss. River Fuel Corp.	3,394	32.88	111,596	12/31/55	2.02	6,856	6.1	1.40	4.3	69.3
Mountain Fuel Supply Co.	2,189	25.50	55,820	12/31/55	1.50	3,284	5.9	1.20	4.7	80.0
Northern Natural Gas Co.	3,654	42.00	153,468	12/31/55	3.56	13,008	8.5	2.20	5.2	61.8
Panhandle Eastern P. L. Co.	3,379	78.25	264,407	12/31/55	5.01	16,929	6.4	3.00	3.8	59.9
Southern Natural Gas Co.	3,666	35.13	128,787	3/31/56	2.70	9,898	7.7	1.80	5.1	66.7
Totals			$1,137,063			$78,296	6.9%			

Based on latest available income statements, April 30, 1956.

Sources: Moody's Cumulative Supplements and Standard & Poor's Stock Guide.

APPENDIX E

South Carolina Generating Company

A recent application of the cost of capital approach to the fair rate of return issue is to be found in Federal Power Commission Opinion No. 297, issued October 24, 1956, in the matter of South Carolina Generating Company. Although the company concerned is an electric company, rather than a gas company, the Opinion is, nevertheless, deserving of attention because of the consistency with which it followed out the principles heretofore employed in connection with natural gas pipe line companies only.

This particular proceeding arose under Sections 205 and 206 of the Federal Power Act. South Carolina Generating, a wholly-owned subsidiary of South Carolina Electric & Gas Company, owned and operated a steam electric generating station (Plant Urquhart) which supplied only three customers. One was South Carolina Electric & Gas Company itself; another was Georgia Power Company, a non-affiliated utility, and the third was an industrial concern which was the contract operator of an Atomic Energy Commission plant on the Savannah River, near Aiken, South Carolina.

Cause of action. - The cause of the action, which brought South Carolina Generating before the Federal Power Commission, was a complaint by the Georgia Public Service Commission to the effect that Georgia Power Company, under its jurisdiction, was paying South Carolina Generating more for energy than the latter was charging its other two customers.

It did not matter that the rates were mutually satisfactory to both parties; consumer protection seemed to require that the issue of discrimination be examined.

Rate of return at issue. - The necessity for determining just what rates would be fair, reasonable and non-discriminatory required, among other things, an examination of the matter of rate of return. South Carolina Generating claimed that this should be 6 per cent, and that it should be applied to a rate base of $13,089,000. It based this claim upon a cost of capital deduced from a hypothetical capital structure, and replacement cost, rather than historic cost, of debt and preferred stock capital.

Class of capital	Proportion	Cost Rate	Cost Factor
Long-term debt	50%	3.50%	1.75%
Preferred stock	15	4.75	.71
Common equity	35	10.00	3.54
	100%		

Over-all Rate of Return 6.00%

Actually, so the record showed, South Carolina Generating had been financed 90 per cent with debt capital; this had been done in order to get costs down so that Generating might take on the industrial plant as a customer. Actually, the weighted average cost of debt capital was 3.99 per cent, rather than the 3.50 per cent, shown above. No preferred stock capital had been used. Had the cost of capital formula been set up on this basis the claim for 6 per cent, over-all, would have led to the conclusion that the common equity was entitled to a return of 26 per cent, or more, something quite absurd, and clearly unsupportable.

Class of Capital	Proportion	Cost Rate	Cost Factor
Long-term debt	90%	3.99%	3.59%
Common equity	10	26.10	2.61
	100%		6.00%

Over-all rate of return 6.00%

Consolidated capital costs. - The Commission solved the problem by adopting the consolidated capital structure of South Carolina Electric & Gas Company a subsidiaries, including South Carolina Generating, and South Carolina Natural Gas Company, a relatively small unit.

The weighted average cost of the system debt capital was 3.46 per cent which was not, after all, very much less than Generating had asked. The proportions of debt, preferred stock, and common equity in the consolidated capital structure were 62.8 per cent, 9.4 per cent and 27.8 per cent, respectively. Combined with capital costs they produced the following computation, which appears as a footnote to page 13 of the Opinion, wherein South Carolina Generating was allowed a rate of return of 5.55 per cent.

Class of Capital	Proportion		Cost Rate	Return
Debt	62.8%	@	3.46%	2.17%
Preferred stock	9.4	@	4.90	.46
Common equity	27.8	@	10.50	2.92
	100.0			5.55%

The Opinion rationalized that 10.5 per cent, as an allowance for the common equity, was not too great even though earnings-price ratios on South Carolina Electric & Gas Company for the years 1950 through 1954 had averaged 7.9 per cent. The additional allowance, it

said, would cover financing costs and compensate for

> The relative thinness of the equity, competition from public pwer and adverse weather conditions affecting a system with a high percentage of hydro capacity. This margin . . . also gives appropriate weight to the present upward trend in the money market.

The appearance of this Opinion, in 1956, may be taken as an indication that the Federal Power Commission has not been at all dissatisfied with its reliance upon cost of capital as a means of resolving the fair rate of return issue and was, in fact, settling down to its use.