VALUATION OF PUBLIC UTILITY PROPERTIES FOR RATE MAKING PURPOSES

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VALUATION OF PUBLIC UTILITY PROPERTIES FOR RATE MAKING PURPOSES

By

James E. Brown

AN ABSTRACT

Submitted to the College of Business and Public Service
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Approved 

James E. Brown

This is a study of one phase of public utility accounting, that of valuation of the properties of public utilities for rate making purposes. The objective is to bring to a focal point those problems in valuation which have been prevalent since the early days of regulation. In addition, one other problem, peculiar to any economy witnessing a debasement of its currency, is presented. No solution to these problems has been offered in any exacting detail. The goal has been, rather, an emphasis placed upon the need for continued efforts to find a workable solution, equitable to all the parties concerned with public utility service.

The study of public utilities has long been recognized as predominantly economic in nature. Of necessity, therefore, the role of accounting for public utilities is discussed in order to portray its significance in such a study. Since the advent of "administrative" regulation, around 1935, the accounting function has played an extremely important part in the regulation of public utilities. Alternative courses of action, not to mention regulatory decisions, have been based upon accounting data, the adequacy of which is one of the prime concerns of this study.

In order to introduce the current problems it is necessary to survey, through both court decisions and technological developments, the "legislative" and "judicial" eras of public utility regulation. This survey is historical in nature, yet

illustrates quite adequately that certain problems in valuation have remained inherent in public utility regulation even to the present day.

Originally, the rate base was given every consideration in the determination of a "fair rate of return." The rate of return, calculated by dividing the net operating income by the valuation of the property employed for public use, was held fairly constant, the regulatory bodies varying the valuation as conditions and circumstances changed. In periods of rising prices the utilities desired to value their operating properties on a replacement basis since this would substantiate their arguments for rate increases.

The regulatory bodies, around 1935, almost uniformly agreed that, at least for ease of regulation and "fairness", the valuation should be held constant and that the rate of return be varied to allow for changes in conditions and circumstances. The method of valuation chosen was original cost since this would be readily ascertainable and, thus, easily controllable. This method is, in theory at least, quite acceptable to the public utility and the rate-paying consumer; however, in practice it has rarely been followed. The regulatory commissions and courts have, in the main, held both the rate base and the rate of return constant, disregarding to a large extent any changes in economic conditions and circumstances.

James E. Brown

The decline in the value of the country's monetary unit, the dollar, has brought additional problems to light, especially in the controlled public utility industry. When regulatory bodies refuse to vary from a rate base valuation of original cost and further refuse to adequately adjust the allowable "fair rate of return" then the public utilities are forced to recover, at least in the present era, their costs in cheaper dollars and thus deteriorate their investment. It is concluded that this deterioration, unless prevented through formal recognition of the existing economic conditions and circumstances, will lead to eventual public ownership which might not stop with the public utility industry.

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This work is dedicated to my father, James H. Brown, whose life is devoted to uniting the interests of the public and the public utility industry, and to my wife, Maxine, without whose encouragement and devotion this study would never have been completed.

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CHAPTER I

INTRODUCTION

This is a study of one phase of public utility accounting, that of valuation of properties of public utilities for rate making purposes. The primary purpose of this study is to expose a few of the problems inherent in valuation of public utility properties and especially as they affect the setting of rates. In order adequately to explore this particular phase it is first necessary to relate the responsibilities of accounting to the public utility and to provide at least a brief background of the public utility industry. Accounting has played an important role in the growth of industry and particularly in the rapid growth of public utilities since the increased use of long-term capital has required improved techniques of cost accrual and distribution.

The history of business operations is provided by accounting. Accounting records the costs incurred and revenues received, the specific requirements being shaped by the characteristics of the particular enterprise and industry and the demands of groups and interests which are external to accounting as such. It provides, in the balance sheet, a statement of prior costs which are considered as continuing to represent valuable assets of benefit

to future operations. The income statement provides an estimate of the costs of a period of time, which are treated as expenses, and of the revenues, which are treated as the source of income. Accounting is not a science since its principles do not have an extrinsic basis of validity, unhindered by human relationships; moreover, it is a practice or procedure that, in the hands of qualified individuals, becomes a disciplined school of thought.

The specialized procedures and functions of accounting for public utilities are explained partly by the divergent characteristics of the public utility enterprise. First, the public utility is, usually, a vertically integrated organization, which both produces and distributes the utility's services. Second, the investment in plant and equipment is unusually large in proportion to the periodic revenues received. This investment in plant and equipment, further, is relatively fixed because of its specialized nature, immobility, and long life. Third, public utilities will tend toward larger organization and increasing operations in view of the fact that, because of the large fixed investment in plant and equipment, unit costs decrease (and return increases) with increased utilization of facilities. Fourth, public policy has granted to utilities a territorial monopoly for the essential utility services. Fifth, since utilities are privileged monopolists by decree of government, they also are closely regu-

lated by government. In order to regulate the utility effectively, moreover, practically every phase of its business conduct has been subjected to regulation. Last, the very nature of the utilities' services makes close relations between the customer and the utility a necessity. These characteristics should be given some additional consideration at this point to depict their influences in accounting for public utilities.

Plant Investment

The availability of capital and the costs attached to this capital are of prime importance to public utilities primarily because the revenue dollar requires a much larger investment in plant and equipment than in other industries. Schedule 1, appearing on the following page, shows the number of years required for total gross revenue to equal plant investment.

It can be readily ascertained from Schedule 1 that the investment is "turned" approximately 1.4 times each year in the manufacturing industry, approximately once a year in the construction industry, and as much as 3.6 times each year in wholesale trade firms; however, this investment is "turned" only once in more than 6 years in an electric utility and only once in every 5 years in the gas

and steam heating industry.[1]

SCHEDULE 1[2]

Years Required to Equate Revenue and Investment[3]

Industry	Years
Manufacturing	0.71
Construction	1.03
Wholesale Trade	0.19
Retail Trade	0.28
Services	0.53
Public Utilities:	
Electric Light and Power	6.30
Gas and Steam Heating	5.00
Telephone	3.87
Railroads	3.56

The public utility not only receives limited revenue in relation to its fixed investment but also must maintain this fixed investment in plant and equipment at approximately a 90 per cent level based on invested dollars.[4] Manufacturing companies must maintain fixed investment at about 60 per cent of total capital, wholesalers at about 40 per cent, and retailers at about 20 per cent.[5] In other words,

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[1] Statistics of Electric Utilities, Federal Power Commission, 1948, pp. XXI, XXII.

[2] Taxation Statistics, Ottawa, Department of National Revenue, Taxation Division, 1949, pp. 42-53.

[3] Investment in this case is taken to mean gross book cost of operating fixed assets and inventory.

[4] Roy A. Foulke, Practical Financial Statement Analysis, (McGraw-Hill Book Co., New York, 1950), pp. 288-289.

[5] Electric Utility Cost Units and Ratios, Federal Power Commission, FPC S-18, pp. 97, 112-113.

while plant and equipment comprise 90 per cent of total invested capital in the public utility, the average retailer would have 80 per cent of its total capital invested in working assets such as inventory. In accounting for the public utility, therefore, as much and perhaps more emphasis must be placed on accounting for the plant and equipment as the retailer, manufacturer, and wholesaler place upon valuation and control of inventories.

Although recording the original acquisition of plant and equipment may prove no difficult task for the utility, subsequent acquisitions of similar plant and equipment capable of producing similar services will vary in cost to a large extent because of technological improvements and price level changes. In addition, maintenance costs and repairs of a long-term nature must be allocated in some way to the life expectancy of plant and equipment. Various regulations of the federal and local governments further complicate the already complex situation in accounting for public utility plant and equipment.

Public utilities, in view of the long-term nature and amount of the investment in plant and equipment, have been encouraged to finance these requirements partly by long-term debt capital rather than by 100% equity capital. The relative stability of earnings, moreover, makes this mixed form of financing even more popular. Manufacturers, wholesalers, retailers, and other types of unregulated enterprises find earnings less stable and the need for a high

percentage of fixed investment relatively low; thus, accounting for these industries places emphasis on equities while the public utility must deal with accounting for debt and equities.

Unit Costs

The large percentage of fixed plant and equipment in public utilities explains the fact that as production increases unit costs decrease. If such a large portion of total capital is stabilized in plant and equipment then only a small percentage is available or used for costs which vary directly with output. To illustrate, assume an electric utility, with total capital of $10,000,000, invests 90 per cent of that capital in plant and equipment with a useful life of 18 years. Its fixed costs, regardless of the level of output, will remain at $500,000 per year. Since variable costs are negligible, unit costs will decrease as production increases. Schedule 2, which appears on the following page, illustrates the decrease in unit costs as the level of production is increased in a concern with a high percentage of fixed capital investment.

SCHEDULE 2

Unit Cost at Various Levels of Production

Note 1: Capacity - 100,000 units.
Note 2: Variable cost - $1 per unit.

Percent of Capacity	Number of Units	Total Fixed Costs	Unit Fixed Costs	Unit Variable Cost	Total Unit Cost
20	20,000	$500,000	$25.00	$1.00	$26.00
40	40,000	500,000	12.50	1.00	13.50
60	60,000	500,000	8.33	1.00	9.33
80	80,000	500,000	6.25	1.00	7.25
100	100,000	500,000	5.00	1.00	6.00

This behavior of costs, together with the equally obvious efficiences of large scale operations, has tended to prove competition in public utilities uneconomical and wasteful. This is also probably the prime reason for the large number of mergers and consolidations, particularly of those utilities operating in over-lapping geographical areas.

Monopolistic Characteristics

The public utility enjoys a legal monopoly within a specific territorial area. This territorial monopoly is not, however, a complete economic monopoly since the consumer, in most cases, can choose to purchase substitutes. The users of electricity, for example, can purchase gas, coal, oil, or wood as a substitute for heating and cooking purposes. Of course, electricity is indispensable for most lighting and industrial uses; thus, in some ways, the terri-

torial monopoly of electric power companies is extended to a natural economic monopoly.[6]

Originally, the main reason for utility regulation was to prevent the charging of monopoly prices and to insure the public of the advantages of a controlled monopoly. Competition in public utilities does not provide a return sufficiently high to attract the additional capital investment which is necessary for growth and quality service to the public. As an example, the City of Denver, in 1901, granted a franchise to a new electric power company which agreed to furnish electricity at 5 cents per kilowatt hour, in contrast to a rate of 15 cents charged by the existing electric light company. The price war which followed forced the rate down to 2½ cents with the result that the new company was forced to sell out to the old company which immediately raised the rates back to the monopoly level of 15 cents.[7] It is obvious, then, that utilities lend themselves to mo-opolistic characteristics; however, this monopoly granted by the public must be regulated by the public through their government.

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[6] John Bauer and Nathaniel Gold, The Electric Power Industry, (Harper and Brothers, New York, 1939), pp. 11-12.

[7] Ibid., pp. 203-224.

Customer Relations

The public utility has probably the widest range of customers of any industry with the exception, perhaps, of the food stores. In view of the nature of the services rendered, which can be labeled as a necessity, and the close personal contact with customers (telephones in homes, electric poles and wiring on personal property, use of public streets, etc.), the responsibility is extremely heavy on the accounting department to maintain customer goodwill and to maintain accurately the accounting records both for customer accounts and for regulatory bodies.

Role of Accounting

Accounting for the public utility has a role which is both varied and difficult. There are groups of persons to whom the accounting reports must be rendered which are in number more than most other industries experience. Such additional reports include, for example, reports to regulatory bodies and franchising agencies. Of course, the needs of management must be filled if the utility is to retain an efficient management acting in the best interests of the company, its stockholders, the customers, and the regulatory bodies. One of the main functions of accounting, therefore, is to provide to management the results of operations and to aid management in carrying out one of its greatest tasks, that of performing the basic business func-

tions of analysis, organization, assignment, and supervision. In order to carry out these responsibilities, management must have comprehensive, accurate, and prompt analyses of their operations, not only from year to year, but also currently. It requires constant, day to day comparisons of cost and probable costs under alternative decisions. The accounting function in public utilities is further complicated by the fact that the system of accounts has been prescribed by regulatory commissions, while the accounting systems in non-regulated industries may be adjusted to fit the special requirements of management.

Utilities are financed in large part by debt capital and preferred stock. For this reason, creditors are given much consideration in the preparation and maintenance of the accounting records. Short term creditors, such as commercial banks and suppliers, are interested in the working capital position for assurance of payment on the due date. Public utilities, however, make limited use of short term credit except in certain instances when refinancing of a long-term debt is contemplated, new debt or stock financing is anticipated, or supplies are purchased on short-term credit. The bondholder, however, is desirous of information pertaining to the security of his principal, probability of repayment at the due date, and ability of the utility to meet the interest payments. The margin between income and all payments on obligations is of great interest, therefore,

to the bond or debenture holder. The holder of a mortgage on public utility property is interested in the margin between the amount of the loan and the value of the secured property.

Customers are billed in various ways; in advance of service as in the telephone industry; after receipt of service as in the electric industry; or at time of receipt of the service as in the case of most passenger transportation services. Periodically, the utility must determine the amount of the customer's bill, present it to the customer, collect it, and maintain accurate records on each customer. The management must continuously review its credit and collection policies, the services rendered, and all factors which relate to the customers.

Universities, research organizations, statistical groups, and trade publications frequently request information about operations. Public utilities generally find that this information release is of utmost importance both in creating goodwill and exchanging ideas with others for more efficient management. Most industrial corporations regard their operating records as confidential and rely only upon annual reports to satisfy the desires of these interested groups. One other group of persons who have similar interests in the results of operations are the employees. Unionism has in large part demanded accounting reports forpurposes of bargaining, mediation, and arbitration. Payroll and other

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accounting records are thus greatly detailed.

The stockholder, in view of his inherent risk in the operations of the public utility, is often quite concerned with the results of operations. In general, this group depends primarily upon the annual report since they are usually widely dispersed and very infrequently have access to the books of the corporation. In many ways, the stockholder is in much the same position as the bondholder. He is interested in the security of his investment as well as the annual income his shares will produce. Fortunately, this information is usually readily available because the accounting practices and reports are so thoroughly and carefully controlled by public regulatory commissions.

The responsibility to government agencies has grown progressively in the area of presenting financial information. Numerous reports to federal, state, and local governments are required of both utilities and industrial concerns. The Securities and Exchange Act of 1934, for example, requires detailed operating reports of all companies desirous of having their issues of securities listed on a securities exchange. Social security laws, unemployment compensation laws, and tax statutes have all placed a burden on the accounting procedures. The public utility, moreover, not only follows the general pattern of reporting and record-keeping, but also must prepare many additional reports to federal, state, and local bodies, the primary purpose of

which is to insure the continuity of operations in the best public interest. In general, these additional reports may be summarized into the following categories:

1. Approval of security issues requires detailed financial and operating information under Section 6 (b) or Section 7 of the Public Utility Holding Company Act of 1935. The Securities and Exchange Commission requires this information and examines its accuracy prior to public sale of securities.

2. In addition to the various tax reports required of all business organizations, there are numerous other tax reports and payments to which the public utility is subjected. Examples of these other taxes are state and local franchise taxes and the federal electrical energy tax.

3. Federal, state, and local regulatory commissions require many additional reports to aid in effective regulation of rates and services.

4. State and local franchises often require supplemental reports in respect to the exercise of rights and privileges under the franchise.

Accounting Concepts

One point remains to be covered in this introduction to the role of accounting in public utilities; that is, a review of the accounting concepts which are generally accepted and their relationship to public utility accounting.

The first and foremost assumption which is made by accountants is that the corporate enterprise will have a continuity of life, the end of which is unascertainable. Neither the businessman, the investor, the public, nor the accountant contemplate liquidation, for if they did there would be little basis for determining periodic profit and loss, or for displaying on a balance sheet the retention of prepaid costs in the form of fixed or intangible assets. The public utility is in a like position and, therefore, carries on its books fixed and intangible costs of continuing value, such as plant and equipment, with provision for their amortization over future accounting periods. The justification for this valuation is the assumption that the organization will continue indefinitely as a "going concern."

Since it is assumed that the utility will have continuing life it is then possible to determine the financial status and results of operations from time to time. Each month, quarter, or year an estimate may be made of operational results, the time selected representing an accounting period. These results must be properly classified as estimates since real results could only be determined upon complete winding-up of all affairs and total liquidation. In order for these estimated results to be meaningful over a period of time, the principle of consistency in accounting methodology has arisen. This concept enables management and other interested groups to compare the estimated

progress of the company from period to period.

The cost convention has been utilized primarily because of simplicity and because cost is readily ascertainable in terms of a common denominator, the dollar. It is presumed that the purchaser buys at the most reasonable estimate of market value at the time of purchase; therefore, to record an acquisition at cost is to record it at market value at the time of acquisition. To do anything else is to create problems which are, at best, difficult to solve and still report accurately and in terms of the common denominator. Roy B. Kester defined the concept of cost in this manner:

> "The records of an individual concern must show what its own costs are; never those of a competitor, nor what its own costs might have been had other conditions prevailed or other decisions been made than those which were made. In other words, the records of each concern must provide an accurate history of what actually took place in the concern."[8]

It is thus possible, and even quite probable, that the accounts showing historical costs will not reflect current market values. There are a number of reasons for this. First, the factors of wear, tear, obsolescence, and deterioration will deplete the value in terms of useful life. Allowances have been made, however, for an adjustment of this nature in the computation and recognition of all of

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[8] Roy B. Kester, Advanced Accounting, 4th Edition, (Ronald Press Co., New York, 1946), pp. 31-32.

these factors in establishing the depreciation rate. Second, the particular item or asset may be subjected to varying values because of changes in economic factors such as demand and supply. Third, the change in the price level and value of the dollar will cause cost to vary considerably with market value. This is especially true in the last 20 years when the value of the dollar has fallen over 50 per cent.

The cost convention has been altered somewhat by the regulatory bodies governing public utilities. The Federal Power Commission, for example, requires that the cost of assets to utilities must be "the cost of such property to the person first devoting it to public service."[9] This means, for example, that a utility purchasing existing facilities of another utility must record this acquisition at the original cost to the first utility, any excess (purchase price over original cost) being set up in an "adjustments" account. The disposition of this "adjustments" account is discussed in a later chapter. However, if a purchase of a non-public property is made, such as an office building acquired by the utility from an insurance company, the present purchase price may be recorded regardless of its original cost since this is the first time that asset is to be used for public service.

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[9] Federal Power Commission, Uniform System of Accounts Prescribed for Public Utilities and Licensees, September 1, 1957, p. 6.

The public utility, as well as other types of businesses, follows for the most part what are known as "generally accepted accounting principles." These principles have been defined by the American Institute of Certified Public Accountants as accounting postulates, derived from experience and reason, and proven useful. When these postulates have been sufficiently accepted, "...they become a part of the 'generally accepted accounting principles' which constitute for accountants the canons of their art."[10] These principles, it may be further noted, do not provide hard and fast rules but rather guides to a course of action. The AICPA made this clear in its terminology bulletin:

> "Care should be taken to make it clear that, as applied to accounting practice, the word principle does not connote a rule from which there can be no deviation. An accounting principle is not a principle in the sense that it admits of no conflict with other principles. In many cases the question is which of several partially relevant principles has determining applicability."[11]

The importance of these generally accepted accounting principles is illustrated by the attitude of the SEC in its requirements governing reports and statements. Accounting Series Release Number 4 of the SEC states:

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[10] American Institute of Certified Public Accountants, Accounting Terminology Bulletin Number 1, 1953, p. 11.

[11] Ibid.

"In cases when financial statements filed with this Commission pursuant to its rules and regulations under the Securities Act of 1933 or the Securities Exchange Act of 1934 are prepared in accordance with accounting principles for which there is no substantial authoritative support, such financial statements will be presumed to be misleading or inaccurate despite disclosures contained in the certificate of the account or in footnotes to the statements provided the matters involved are material. In cases where there is a difference of opinion between the Commission and the registrant as to the proper principles of accounting to be followed, disclosure will be accepted in lieu of correction of the financial statements themselves only if the points involved are such that there is substantial authoritative support for the practices followed by the registrant and the position of the Commission has not previously been expressed in rules, regulations, or other official releases of the Commission, including the published opinions of its chief accountant."[12]

The preceding has been a brief analysis of the relationship of accounting to the field of public utilities. The second step in the study of the aforementioned phase of accounting for public utilities is to provide a brief history of the public utility industry to note its growth and importance in our country's economy.

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[12] Securities and Exchange Commission, Accounting Series Release No. 4, April 25, 1938, (U. S. Government Printing Office, Washington, D. C., 1956), pp. 5-6.

CHAPTER II

HISTORICAL DEVELOPMENT OF THE PUBLIC UTILITY INDUSTRY

The early history of America, with its relatively sparse population, provided little need for the services of a public utility. Cooking and heating was done primarily with coal and wood; candles and oil lamps provided the lighting. One of the first things a family did when settling was to dig a well or find a spring to supply their water needs. Communication was limited since the telephone and telegraph had not yet been invented, and would have been highly unprofitable at any rate because of the scattered population. As the population grew, however, and began to concentrate in cities and towns, there arose a definite need for public services such as lighting, gas, water, and communications. This chapter will be devoted to a brief historical development of these public services.

Water

The first of these public services to be organized was the water utility. As early as 1754, in Bethlehem, Pennsylvania, water was pumped from a spring to a tank in the village square for community use. The pumps that were used were wooden, but by 1761, iron pumps were employed.[1] By the end

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[1] H. L. Russell and F. R. Turneaure, Public Water Supplies, 1924, p. 8.

of the century a number of cities had waterworks, all of which were privately owned. Although development of this utility was rather spasmodic during the 19th century, there was a fantastic growth around the turn of the 20th century. The typhoid fever problem and local demands necessitated eventual municipal ownership. Today, practically every city is supplied with water and almost all waterworks are owned and operated by the municipality.

Gas

The use of gas was first inaugurated in the United States in 1816, in the City of Baltimore. Most efforts to promote the gas industry, however, were opposed because of the odor. This opposition caused its use to be extremely limited and, therefore, its cost very high. It was not until 1850, when the Bunsen burner was invented, that gas could be used economically and without odor. Natural gas first came into widespread use toward the end of the 19th century; however, even its use had been restricted for lack of a means of transportation until the advent of the long-distance pipeline. These long-distance pipelines, a product of the last decade, have brought the vast natural gas resources of the west into the economical reach of eastern users. Today, although gas has been used less and less and electricity substituted, there is increased competition among gas companies for the consumer's dollar and there is

increased usage of gas as a result of lower prices. Natural gas companies are predominantly privately owned today, being relatively new; however, like the water companies, most artificial gas distributors and producers are publicly owned and operated.

Telephone

The credit for the invention of the telephone and the launching of a new public service goes to Alexander Graham Bell. The Supreme Court, in a telephone patent case, decided in 1897, said:

> "On March 7, 1876, patent No. 174465 was issued to Alexander Graham Bell, in which patent were described and claimed 'a method of and apparatus for transmitting sound by means of an undulatory current of electricity.' This was the original telephone patent. And it signified that Bell invented the telephone."[2]

Although Bell's telephone was crude and its uses at that time limited, the industry advanced rapidly. The beginning of the 20th century found the American Telephone and Telegraph Company as head of the original American Bell Telephone Company and investing large amounts of money into the development of this industry. It has continued to remain at the top of the telephone industry. As of December, 1949, for example, the company had 33,388,258 telephones in

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[2] 167 U. S. 224, 243 (1897).

service, through its subsidiaries, which was about 80 per cent of the total number of telephones in the United States. The company further estimates that approximately 95 per cent of all toll calls originating in the United States are routed in whole or in part over its lines or those of its subsidiaries.[3]

Electricity

Electric lighting was first introduced at approximately the same time as the telephone. The first man known to have made a machine for the manufacture of electricity was Otto von Guericke, in 1650, although Francis Hawksbee, in 1709, made a similar machine of considerably better design.[4] The first practical incandescent lamp was invented in 1879 by Thomas Edison. This development was but a step in Edison's plan of a complete electrical system which included the switch, socket, and other devices. Ultimately, Edison had his system adopted for practical use and the industry has advanced rapidly ever since.[5]

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[3] Moody's Manual of Public Utilities, 1950.

[4] Henry Schroeder, History of Electric Light, (Smithsonian Miscellaneous Collections, Volume 76, No. 2, August 15, 1923), p. 2.

[5] J. W. Howell and Henry Schroeder, History of the Incandescent Lamp, 1927, pp. 61-62.

The electric and power industry today is organized, as it has been from Edison's day, almost altogether in the form of private business. Only about 7 per cent of total electric distribution is furnished by publicly owned plants, and 93 per cent by private companies.[6] These are private as to ownership and management, and conform generally to the pattern of ordinary business. Actually, they are engaged in public service, are legally vested with public interest, and are intrusted with the most vital future public function. It is necessary, therefore, to examine briefly the prevailing form of organization of public utilities and its suitability to meet public needs.

Form of Organization

The prevailing utility form of organization is that of an ordinary business corporation. It is organized usually under the laws of the state in which it owns and operates properties. Its rights and duties are fixed by both statute and its charter, which provide for officers, home office, and capitalization, permit construction, maintenance, and operation of properties for public service, grant the right of eminent domain, and authorize such other activities as may be regarded consistent with utility purposes.[7]

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[6] Solomon Fabricant, Economic Progress and Economic Change, (National Bureau of Economic Research, Inc., 34th Annual Report), p. 6.

[7] Martin G. Glaeser, Public Utilities in American Capitalism, (MacMillan Co., New York, 1957), pp. 32-39.

The charter is the state authority for corporate existence and activity. To establish and carry on its business, the company is required also to obtain a franchise from the municipality in which it operates. This is a special grant authorizing construction, maintenance, and operation of the properties in the streets and other public places. The franchise usually fixes special conditions on the basis of which it is granted. Often it provides for safety devices and supervision for public protection. It may also prescribe standards of service, of plant extensions and improvements, and of rates.[8]

Local franchises are regarded as contracts between the municipalities and the companies. Their special provisions, however, have come largely within the control of the state, where a state system of regulation has been established, especially with respect to rates. In some states, before a local franchise becomes effective it must have the approval of the state utility commission, taking the form of a "certificate of necessity." The prevalent standards generally established for the issuance of the certificate call not only for positive showing as to public

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[8] C. O. Ruggles, Aspects of the Organization, Functions, and Financing of Public Utility Commissions, (Cambridge: Harvard University, Graduate School of Business Administration, April, 1937), pp. 45-48.

convenience and need, but also for reasonable proof that the service cannot be satisfactorily furnished by existing facilities and organization, and that unnecessary competition would not be created by the addition of the new utility. The object is to avoid needless duplication and to prevent competition that will not result in public benefit.[9]

The public utility, once it has obtained the "certificate of necessity," has satisfied certain legal requirements and thus has a legal right to acquire or construct properties, to use public property, to use right-of-way privileges, and to proceed with its operations. Since the utility has been granted permission to operate in the public interest, it is therefore subjected to public regulation and control, usually under a state commission created for this purpose. The commission, acting within powers and duties fixed by law, is responsible for representing the public and protecting their interests. The authority granted to public utility commissions extends usually over rates, methods of financing, character of service, accounting, and records.[10]

The public utilities, as originally organized, were strictly local organizations and were concerned only with the services provided to a particular community. These

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[9] Ruggles, Op. Cit., pp. 48-53.

[10] Ibid., p. 47.

utilities were local in every sense; they were financed by local capital; the organizers were local people; they were controlled by residents of the locality; and, the directors were usually local businessmen who had additional interests in the community. The public utility was, in brief, an interfusion of local interests and was operated to local needs and advantages. While it was organized as a private business for profit, it was predicated upon long-run considerations of local service and development.[11]

Today, very few localities are served by local utilities which are not subsidiaries of, or at least partly owned by, larger companies outside the community and under "absentee" control. Real control has been removed from the locality and set in the hands of outside interests, although there are many companies serving only one locality. Outside centralized control, then, determines the role that local organization and management will play; however, the operating subsidiaries of large holding companies are usually managed in the various communities by local interests. Absentee ownership and control has risen to a predominant position in the public utility industry, through holding company systems such as the great American Telephone and Telegraph Company.

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[11] Emery Troxel, Economics of Public Utilities, (Rinehart and Company, Inc., New York, 1947), pp. 25-49.

The present day holding companies began replacing companies of local ownership and control around the first of this century. Considerable progress by these holding companies was made by the time of World War I, and the years since have seen them make rapid progress in both size and numbers. This growth of large organizations was a result, predominantly, of technological advancements. The growth of the distributive function was stimulated as the advantages of large-scale centralized production were realized. As transmission systems became practical, separate localities could be joined together economically and served from the same source of supply. Larger areas and longer distances were brought economically within the same operating organization as larger stations and transmission facilities were developed. It became uneconomical for local operating companies to serve one community. As a result, intermunicipal systems of production, communication, transmission, and distribution came into existence, all under centralized management.[12]

The growth of these larger organizations, however, was not a preconceived or systematic growth, planned to meet the changing conditions. The transition, which took place

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[12] Federal Trade Commission, Utility Corporations, (70th Congress, 1st Session, Senate Doc. 92, Part 72-A), pp. 37-44.

rather spasmodically, was almost entirely a matter of private initiative and was accomplished mostly by interests outside the local utility. It was the promoters and the bankers who saw profits and private gain, not public needs and objectives, in bringing separate utilities under a combined organization and unified control. Combined operations over more extensive geographical areas could be handled profitably under prevailing rates and there was little or no thought of the public interests or of reducing the rates.

The process of consolidation and unification of operations moved in three main steps. First, an enterprising individual brought together two or more local utilities in adjacent communities. Secondly, two or more of these first consolidations were brought together into a larger combination, similar unifications taking place throughout the country. Finally, out of these scattered reorganizations there emerged the several groups of interests which constitute the present network of holding companies, with their dependent and controlled subsidiaries operating throughout the country.[13]

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[13] The following court cases illustrate this step by step growth in public utility holding companies:

Metropolitan Edison Co. (Pa.), P.U.R. 1923B, 7, 8; Jersey Central Power and Light Co. (N.J.), P.U.R. 1925D 699, 701; Continental Gas and Electric Co. (Neb.), P.U.R. 1925A 448; Bangor Ry and Electric Co. (Me.), P.U.R. 1925E 705.

The typical utility organization of today consists usually of a holding company which controls a group of operating companies and other affiliated companies, all managed for the advantage of the common stockholders of the holding company. Historically, there were quite often three or more tiers of holding companies, in which case the top company owned the stock of two or more holding companies, which in turn held the stock of other companies, which finally controlled the utilities actually owning and operating public service properties in particular communities. The Public Utility Holding Company Act of 1935, however, limited the financial structure to two tiers of holding companies and restricted ownership of operating utilities to one physically integrated system.[14] There are today an infinite number of variations in type and extent of organization and in lines of control, a discussion of which lies beyond the scope of this study.

Financing

Ultimate control of a system of affiliated utilities is frequently held by a small group of individuals with relatively little actual investment in the physical properties of the large utility organization. Usually the control lies with bankers and/or insurance companies, allied

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[14] Section 11, Public Utility Holding Company Act of 1935.

with a promotional engineering and legal group. In the general financing plan, the bonds and preferred stocks of the operating utilities are held by the public, while the common stock is owned by a holding company. Preferred stock has commonly been issued on favorable terms to utility customers, often influential ones, to tie their financial interest with their consumer interest, and so discourage consumer demands for rate reductions. On the basis of such common stock holdings, bonds and preferred stocks were issued to the public for acquisition of the common stock, while the common stock of the holding company passed on to the next tier in the organization. The acquisition again was obtained mostly through debenture and preferred stock issues, while the common stock was taken by the next highest holding company.[15]

In this fashion, essentially, and with wide variation of policy and practice, ultimate stock control of the entire system was pyramided and represented little actual cash expenditure. Control and ownership rested upon a very narrow margin of net investment in physical properties used in public service and its value depended, not upon investment, but upon profits realized through promoting and financing consolidation and management. It represented primarily speculative equities which had little direct relation to

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[15] Troxel, Op. Cit., pp. 180-181.

local properties and service. Consequently, control was quite likely to favor practices that yielded immediate profits rather than long-range policies through which services could be steadily improved, operations economized, utilization of facilities expanded, and real investment thoroughly safeguarded. With the advent of government control, however, this evident fault has been somewhat remedied and such combinations actually do serve the functions of providing secure capitalization, management advice, and overall economic control.

Thus far in this study, an attempt has been made to relate the position and functions of accounting to the special needs of the public utility. In addition, a brief historical development of the public utilities and their form of corporate organization has been presented in order to provide a more sound basis for discussion of one of the major problems in accounting peculiar to public utilities. It is to this particular problem, valuation of utility properties for rate-making purposes, that this study is now directed.

CHAPTER III

THE RATE BASE

There are two basic approaches to the employment of accounting methods in analyzing a particular situation or firm. There is, first, the pecuniary approach which concerns itself with a strict quantitative analysis of revenue and expense. This is the approach most familiar to industrial accountants. The second approach is more qualitative in its efforts to present the position of the company and to establish a rate of return which has equitable features to both the serviced public and the corporate investor. This is the "physical" approach and encompasses the following three major areas:[1]

1. Engineering studies and surveys
    a. Of service characteristics.
    b. Of costs of production.
2. Investigations
    a. Of basic natural resources available.
    b. Of changing technologies.
3. Physical valuations of properties

Physical valuations of properties have come to mean

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[1] Martin G. Glaeser, Public Utilities in American Capitalism, (MacMillan Co., New York, 1957), pp. 257-258.

different things to different people. Professor Glaeser has broken down the various meanings into the following categories:[2]

1. Valuation for taxation.

2. Valuation for public purchase under eminent domain or under charter and special franchise provisions.

3. Valuation in connection with validity of security issues.

4. Valuation for accounting and insurance purposes and for private purchase and sale.

5. Valuation for rate making purposes.

This particular study is directed toward the last of these five definitions, that of valuation of public utility properties for rate making purposes.

Introduction

The valuation of property has received, historically, more attention in the regulation of the earnings of utilities than any other factor. Although the famous Smyth v. Ames case of 1898 was concerned primarily with railroads, the decision was applicable to all phases of public utility operations. At the time the decision was rendered it had little effect on utility regulation since there were few utilities and little regulation; however, the effects of

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[2] Glaeser, Op. Cit., p. 273.

this decision grew paramount as regulation of public utilities increased. In essence, the principle established in this decision was that the public is entitled to protection against unreasonable rates but that the utility, by the same token, is entitled to a fair rate of return for its services. According to the Supreme Court:

> "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 by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask 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 exacted from it for the use of a public highway than the services rendered by it are reasonably worth."[3] (Emphasis supplied.)

This decision has posed two major problems. First, what is a fair valuation of property on which to base a return? Second, what is a fair rate of return? The problem of just what constitutes a fair rate of return will be

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[3] Smyth v. Ames, 169 U. S. 466, 546 (1898).

taken up in a later chapter. In this chapter only the basis for the valuation of public utility properties for rate making purposes will be considered. Among the more prominent theories advocated today are (1) original cost, (2) prudent investment or capitalization of income, and (3) reproduction cost. These theories will be discussed in this order.

Original Cost

Initially, original cost was defined as the aggregate investment in the existing plant and equipment. Since the public utility industry grew by mergers, consolidations, and purchases of local firms, there appeared a vast difference between the "first" cost of acquisition and the cost when taken over by the parent company in one of these consolidations, mergers, or outright purchases. With the revisions of the accounting systems in the early thirties came the theory of costing plant and equipment at its "initial-use" cost. The first example of this theory was employed by the Wisconsin Public Service Commission in 1931, when it required all electric utilities, in its system of accounts, to record all properties subsequently constructed or purchased at their cost as of the time the properties were first used in public service. A Fixed Capital Purchase Adjustment Account was provided to record the difference between the cost to the purchasing utility and the "initial-use" cost,

thus excluding this excess cost from the rate base.[4] This revised theory, first proposed in Wisconsin, became generally adopted around 1936. The Federal Power Commission, the Federal Communications Commission, and the National Association of Railroad and Utilities Commissioners all adopted accounting classification systems which required that plant and equipment subsequently acquired be recorded at its "original cost" in the uniform Account No. 100.1, Utility Plant in Service.[5]

The definition of original cost which was adopted by the FCC is similar to those adopted by the NARUC and the FPC. In part, the FCC said that original cost is:

> "...the actual money cost of (or the current money value of any consideration other than money exchanged for) property at the time it was first dedicated to the public use, whether by the accounting company or by a predecessory public utility."[6]

The general definition meant that any type of utility which acquired plant or equipment which had been previously used in public service must record it at its cost to the

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[4] Uniform System of Accounts for Class A Electric Utilities, P.U.R. 1932A 423, 430 (November 24, 1931, Wisconsin).

[5] Uniform System of Accounts Prescribed for Public Utilities and Licensees, Federal Power Commission, dated June 16, 1936, effective January 1, 1937; Uniform System of Accounts for Telephone Companies, Federal Communications Commission, dated June 19, 1935, effective January 1, 1936; Uniform System of Accounts, NARUC, November 10, 1936.

[6] Ibid., Federal Communications System.

first company to use the facility for public service. In the FPC definition, however, it is stated that original cost means the cost to the first company which used the facility only when the utilities were in the same field. For example, if an electric utility were to purchase for $15,000,000 a street-car system that initially cost the street-car utility company $8,000,000, the original cost would be recorded at $15,000,000; however, were another street-car company to make the purchase at the same price, it would be allowed to record, for rate making purposes, only the initial cost of $8,000,000.

Thus it was that, in both court decisions and accounting circles, original cost of plant and equipment to public utilities was not defined as "initial cost" until after the middle 1930s. The generally accepted theory prior to that time was, as stated by Paton and Stevenson, that:

> "It is the function of the property accounts to show the actual investment of the owners, not the amount which the investment would have been if the property had been purchased elsewhere."[7]

Since that time, however, it has generally been held that initial original cost is to be used for rate making purposes, being justified on the grounds that it is economically equitable to the rate-paying consumer and that its computation is relatively simple.

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[7] W. A. Paton and R. A. Stevenson, Principles of Accounting, (MacMillan Company, New York, 1921), p. 479.

It is necessary at this time to describe the disposition of these "original costs" and the excess of purchase price over "original cost," employing, as an example, the National Association of Railroad and Utilities Commissioners' recommendation of the treatment of Uniform Account No. 100, Utility Plant. The accounts established for the summary account No. 100 are:

No. 100.1, Utility Plant in Service

No. 100.2, Utility Plant Leased to Others

No. 100.3, Construction Work in Progress

No. 100.4, Utility Plant Held for Future Use

No. 100.5, Utility Plant Acquisition Adjustments

No. 100.6, Utility Plant in Process of Reclassification

Accounts numbered 100.1 through 100.4 are required to be kept on the basis of "original cost," that is, the cost to the first company employing these facilities for public service. Any differences between this original cost and actual cost of acquisition are charged to Account No. 100.5, Utility Plant Acquisition Adjustments, of course giving allowance for depreciation accumulated at time of acquisition. The difference in cost to the acquiring firm and original cost when not properly includible in other accounts is charged to Account No. 107, Utility Plant Adjustments. Account No. 100, Utility Plant, therefore represents total cost of operating facilities to the utility, broken down

into its various component parts. Any excess of book cost over acquisition cost is shown elsewhere on the balance sheet. In general, therefore, properties acquired must be shown in the plant accounts at the "original cost" of the acquisition, in the utility plant acquisition adjustment account showing the difference between original cost and cost at acquisition, and in the adjustment account showing any excess of book cost over cost to the acquiring company.[8]

Since all utility facilities are required to be shown at original cost, subject to amortization or depreciation over its useful life, the problem becomes one of disposing of the adjustment accounts. No specific disposition of these adjustment accounts has been definitely established; however, the commissions reserve the right to direct their disposition, whether to expense or to income, or directly to retained earnings. In a Supreme Court decision of 1936, the Court held that:

> "The Commission is not under a duty to write off the whole or any part of the balance in 100.5, if the difference between original and present cost is a true increment of value. On the contrary, only such amount will be written off as appears, upon an application for appropriate directions, to be a fictitious or paper increment. This is made clear, if it might otherwise be doubtful, by administrative construction. Thus, the Commission's chief-accountant testified that by the proper interpretation of

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[8] J. Rhoads Foster and Bernard S. Rodey, Jr., Public Utility Accounting, (Prentice-Hall, Inc., New York, 1951), pp. 301-302.

> Account No. 100.5, amounts therein 'would be disposed of, after the character of the item had been determined, in a manner consistent with the general rules underlying the uniform system of accounts for the distribution of expenditures, according to their character, to operating expenses, income, surplus, or remain as investment.'"[9]

Although this decision by the Supreme Court was directed toward the telephone utility industry, other decisions have been handed down and requirements established by such bodies as the NARUC, FPC, and SEC which indicate that similar treatment of original cost must be given by other utilities as well. As if to further emphasize the meaning attached to the above court order, the Supreme Court went on to say:

> "To avoid the chance of misunderstanding and to give adequate assurance to the companies as to the practice to be followed, we requested the Assistant Attorney General to reduce his statements in that regard to writing in behalf of the Commission. He did this, and informs us that the Federal Communications Commission construes the provisions of Telephone Division Order No. 7-C, issued June 19, 1935, pertaining to Account No. 100.5, as meaning 'that amounts included in Account No. 100.5 that are deemed, after a fair consideration of all the circumstances, to represent an investment which the accounting company has made in assets of continuing value will be retained in that account until such assets cease to exist or are retired; and, in accordance with paragraph (c) of Account No. 100.5, provision will be made for their amortization.'"[10]

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[9] American Telephone and Telegraph Co. v. United States, 299 U.S. 232, 57 S. Ct. 170, 81 L. Ed. 142, 16, P.U.R. (n.s.) 225, 230 (1936).

[10] Ibid.

These excesses of acquisition cost over original cost, therefore, are required to be handled in one of three ways, the ultimate effect of which will be borne by the rate-paying consumer or the stockholder, as the regulatory commissions and courts may decide. The NARUC Committee on Statistics and Accounts, on the subject of the disposition of these excess costs, had this to say:

> "There are three accounts through which acquisition adjustments may be depreciated, amortized, or otherwise written off. A special account, Account No. 505, Amortization of Utility Plant Acquisition Adjustments, is provided in the operating expense group, coordinate with Account No. 503, Depreciation. If written off through this account, the rate payers bear the burden. The amounts may be extinguished through Account No. 537, Miscellaneous Amortization, which is grouped with Income Deductions, after interest. In that event, or if written off against surplus of prior years, the burden falls on stockholders."[11]

Accordingly, the three methods used for amortization of these excesses are charges to expense, charges to income, and charges to surplus.

First, when charges to expense are allowed, through Account No. 505, Amortization of Utility Plant Acquisition Adjustments, they are quite like charges for depreciation and can be computed in determining the rates and the return

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[11] E. W. Morehouse, "Innovations in Public Utility Accounting Regulation," The Yale Law Journal, No. 46, 1937, p. 961.

to the investor. Second, when property is determined to be of no use or service to the customer, it is held that the customer should not be required to pay, in its rate, for the cost of such property. Therefore, such amounts which appear in Account No. 537, Miscellaneous Amortization, are charged against income after operating deductions have been made, and will have no effect on the rate base. The third alternative is to charge these costs directly to surplus, again with no effect upon the rate base.

Advantages of Original Cost

There are certain advantages inherent in the use of the original cost standard of valuation for rate making purposes. First of all, it measures accurately the investor's sacrifice and anticipations, in terms of dollars, at the time of investment. Presumably, funds are obtained to acquire plant and equipment, and these funds are entitled, according to both court decisions and economic custom, to a "fair rate of return." Of course, there is the obvious risk that this return may eventually prove inadequate due to the decline in the value of the dollar; however, that was the risk assumed by bond and stock investors and should be little or no concern of the public. If the investor, for example, was willing to sacrifice $10,000 for a return of 6 per cent per year, then the original cost of acquisition of properties with the $10,000 should be the only basis for computing a fair rate

of return to the investor. If he desired a return greater than 6 per cent, then the investor should not have invested in the public utility, especially in the fixed income securities of that utility. Thus, the chief advantage of original cost lies in the fairness to the investor who desires a secure return on his investment, not a speculation that return will increase as prices increase. By virtue of the utility operating for the public benefit, the costs of capital should remain as low as possible, yet still provide adequate compensation for risks involved and for the use of capital. The utilities have found a way to keep this cost low and that is to provide secure returns. There is little room in the utility field for the true speculator and, by the same token, it is the belief of many that there is little room for a rate of return based on anything other than the original cost of properties acquired with the investors' funds.

Other advantages of original cost include the ease in which the original cost theory can be applied. Since the adoption of accounting records which show "original cost," such adoption having been effected in the mid-1930s, it has been relatively easy to maintain good accounting records on acquisitions, constructions, retirements, and permanent additions. Further, depreciation methods have been standardized and improved records maintained which adequately record the expiration of these asset costs. Since depreciation charges are, in the main, allowable in computing the "fair

rate of return" there has been little concern needed by the investor on this score. Once the rate base has been determined, then, adequate accounting records will show from period to period, through additions and deductions, the valuation upon which the utility is entitled to earn a fair return.

Further, the original cost basis of valuation eliminates any consideration of increases in the prices of labor and materials, a consideration of which would not only be out of proportion to the original investment but also would necessitate accounting records whose cost to maintain would be unreasonably high, and possibly unfair in considering the public welfare. Finally, the use of this basis of valuation prevents a rate base which is higher because of increased property values resulting from factors beyond the control or plans of the utility, such as population growth, municipal school planning and street construction, and consumer living habits.

Disadvantages of Original Cost

In the ascertaining of original cost, one of the main arguments against this basis is found. The initial public utilities maintained highly inadequate records and, further, the growth of the public utility industry has taken place through numerous combinations, sales, mergers, and other financial devices, obscuring in the process the records of the

original cost of property when first put into use for public service. However, on the whole, public utility properties are not overly old and actual cost, even when not readily available, can be estimated accurately. In general, the procedure in making this estimated valuation is to make an inventory of the utility's property, apply unit costs at time of original use as public service property, add general construction overhead costs such as organization expenses, legal expenses, taxes during construction, and interest during construction, and deduct depreciation and amortization to date.[12] Although the task is often long and difficult, reasonable accuracy can be expected in estimating and calculating original cost in this way. As an illustration of the necessary detail involved in calculating original cost, the following two schedules, Schedules 3 and 4, have been reproduced from Professor Clemens' book, Economics and Public Utilities.[13]

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[12] Eli Winston Clemens, Economics and Public Utilities, (Appleton-Century-Crofts, Inc., New York, 1950), pp. 162-169.

[13] Ibid., pp. 164-165.

SCHEDULE 3

Selected Items From the Appraisal

of the Transmission Poles,

Towers and Fixtures, Account 331-A

Conowingo Power Company

	Units	Unit Price	Total
20 ft. poles, chestnut, class I	4@	$ 12.85	$ 51
35 ft. poles, chestnut, class I	10@	19.17	192
40 ft. poles, chestnut, class I	23@	28.32	651
60 ft. poles, chestnut, class I	1@	56.09	56
10 ft. cross arms, single, wood	1,292@	4.08	5,271
Line guys	264@	5.68	1,500
Keystone truss pins	6,559@	.70	4,591
Acres, right-of-way clearing	4.82@	100.00	482
Total			94,641
Miscellaneous Construction Expense, 6%			5,678
Total, Account 331-A			$100,319

SCHEDULE 4

Summary of the Appraisal of the Conowingo Power Company

As of June 30, 1934

Account Number	Title	Reproduction Cost New	Reproduction Cost New Less Depreciation
311	Land	$ 29,838	$ 29,838
312	Structures	21,191	18,650
328	Substation Equipment	50,041	42,530
330	Underground Conduits	374	350
331	Poles, Towers and Fixtures		
	(a) Transmission	100,319	80,300
	(b) Distribution	277,609	208,200
332	Overhead Conductors		
	(a) Transmission	81,614	81,500
	(b) Distribution	165,970	157,700
333	Underground Conductors	1,012	1,000
335	Services	27,592	23,500
336	Line Transformers and Devices	109,290	100,000
337	Line Transformer Installation	9,683	9,683
338	Consumers Meters	48,935	41,600
339	Meter Installation	5,230	5,230
342	Street Lighting Equipment	10,529	9,480
344	General Equipment	17,906	13,500
	Total Direct Cost	$ 957,133	$823,061
301	Organization and Legal 3%	28,714	24,692
351	Engineering, Superintendence and Contractors Profit, 9% of Direct Cost less Land and General Equipment	81,845	70,175
353	Injuries and Damages 1%	9,571	8,231
		$1,077,263	$926,159
355	Interest during Construction 3%	32,318	27,785
	Totals	$1,109,581	$953,944

The objection to the original cost basis of valuation is also often made that this basis fails to allow for the changes in the value of the dollar. This objection has become one of the more vehement arguments for the use of the "reproduction cost" standard and, therefore should more suitably be considered along with the analysis of this method of property valuation. However, before discussing reproduction cost as a basis of valuation, there should be brief mention made of one other popular theory, that of income capitalization.

Capitalization of Income

The market value of the utility's bonds and stocks has been taken as the capitalized value of the utility and often is considered in determining the fair rate of return. The famous Smyth v. Ames decision considered not only original cost and costs of permanent improvements, but also "the amount and market value of its bonds and stocks."[14] It has been proposed that the utility's capitalization might be used as a rate base since earnings to investors are a real indication of their fairness. This quite possibly would be true were the issuance of securities to reflect actual costs of investment; however, regulation of security issues initially was non-existent and as a result security issues bore

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[14] Smyth v. Ames, 169 U.S. 466, 546 (1898).

little resemblance to value. Further, the market value of the securities is dependent upon earnings, the fairness of which is to be established by the market value. Obviously, this is an inadequate rate base since market value depends not only on present earnings but also anticipates future earnings.

There have been a number of decisions, however, in recent years which lend credit to this basis of rate making. Its main argument is that the end result, or return to investors, should be adequate, which is to say that the value of a utility for rate making purposes could be the net income capitalized at some rate which is reasonable and will provide adequate returns to the investor. The Supreme Court, in 1944, established this theory in the Hope Natural Gas Company Case, by ruling that, "Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling."[15] The main advantage, it is claimed, is that the entire problem of valuation can be by-passed; that the earnings need be sufficient to enable a utility to meet its operating expenses, interest charges, preferred dividend requirements, and to pay a reasonable return on its common stock. According to the Supreme Court, "Rates which enable the company to oper-

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[15] Federal Power Commission v. Hope Natural Gas Company, 320, U.S. 591, 1944.

ate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid even though they might produce only a meager return on the so-called 'fair value' rate base."[16] In a later decision, the Supreme Court had this to say about the rate of return and the end-result doctrine, with its little consideration of the means by which the end result is obtained:

> "It is a standard of finance resting on stubborn facts. From the investor or company point of view it is important that there be enough revenue 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 to attract capital."[17]

The courts have held, thus far, to the original cost basis of property valuation in the determination of rates but have resorted increasingly to the end-result viewpoint in the decision regarding the actual rates. There persists, however, that school of thought which advocates reproduction cost as opposed to original cost as the rate base, regardless of recent court decisions to consider neither in favor

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[16] Ibid.

[17] Federal Power Commission v. Colorado Interstate Gas Co., 324 U.S. 581.

of the end-result doctrine. The reproduction cost of property valuation for rate making purposes is the next item to be discussed.

Reproduction Cost

Reproduction cost, like so many other terms used in the field of accounting and particularly in public utility accounting, has been defined in various ways and interpreted in even different manners. One definition of reproduction cost is that it is that cost which it would take to reproduce the property new, with no consideration given toward accumulated depreciation. In view of the fact that accumulated depreciation is not considered and the fact that prices for labor and materials have risen greatly since practically any prior date, this method of property valuation would provide a rate base highly appealing to the public utility. Its practical use, however, was halted almost before it started, by a Supreme Court decision in 1909 which recognized depreciation as an existing and real item of consideration. The Supreme Court recognized depreciation by saying, in the Knoxville Water Company Case:

> "A water plant begins to depreciate in value from the moment of its use. The company is not bound to see its property gradually waste, without making provision out of earnings for its replacement. It is entitled to see that from earnings the value of property invested is kept unimpaired, so that at the end of any given term of years the original investment remains as it was in the beginning. It is not only the right of the company to make such a provision but

> it is its duty to its bond and stockholders and in the case of a public service corporation, at least, its plain duty to the public."[18]

By recognizing depreciation, the Supreme Court thereby eliminated the use of reproduction cost new as a basis of property valuation. On this particular point, the Supreme Court said that:

> "The cost of reproduction is one way of ascertaining the present value of a plant, but that test would lead to obviously incorrect results if the cost of reproduction is not diminished by the depreciation which has come from age and use."[19]

In view of the Supreme Court decisions and the generally accepted recognition of depreciation, the cost of reproduction new can therefore be eliminated from consideration as a method of valuation of property for public utility rate making purposes.

The more common and advocated definition of reproduction cost as a tool in determing fair value is the one in which the reproduction cost is reduced by depreciation to the present date. The argument advanced for the use of this computation, although it does not point out any inherent advantages in using this base, at least points out the dis-

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[18] Knoxville v. Knoxville Water Co., 212 U.S. 1, 13, 29 S. Ct. 148, 53 L. Ed. 371 (1909).

[19] Ibid.

crepancies in using a valuation based on reproduction cost with no consideration of depreciation. If depreciation is properly recognized as an operating expense, the operating profit figure will be reduced at least by the amount of the depreciation, such amount appearing as an increase in the operating expenses. This charge for depreciation, although not usually a cash fund set aside, more probably will find its way into other plant assets. Therefore, by including the additional investment from depreciation charges along with plant properties which have not been adjusted by an depreciation, the valuation on which rates are based would be increased erroneously by the amount of this depreciation.

A few other considerations are apparent. Cost of reproduction to some may mean the cost of reproducing the property itself in the present condition; however, to others it may mean the cost of reproducing a service, using any plant or method available or practical, which is equivalent to the present one. The Supreme Court, however, rendered a decision which in essence meant that the cost of reproduction was the cost of reproducing the existing property, not the existing service.[20] If the cost of reproduction, then, is taken to mean the cost of reproducing the existing plant, the problem arises as to the costing technique. The cost

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[20] McCardle v. Indianapolis Water Co., 272 U. S. 400, 417 (1926).

could mean cost at one of three times: (1) cost of reproducing the property under the same conditions prevailing at the time of its original construction; (2) cost of reproducing the property under present prices and conditions; and (3) cost of reproducing the property at some future date and under expected future prices and conditions. H. C. Spurr has defined the most prevalent meaning in the following manner:

> "If an engineer were told merely to ascertain as a fact what it would cost to reproduce a certain plant or piece of property at a certain date, his estimate would show what it would cost to reproduce the identical plant under present conditions and present prices. This is the plain, non-technical meaning of cost of reproduction."[21]

One of the main arguments for the use of reproduction cost has been maintenance of purchasing power to investors. It is claimed that, were the price level to double and construction prices to follow in the same manner, the investors in the public utility would suffer a loss of purchasing power equivalent to 50 per cent. To illustrate the discrepancy in this argument, consider the following schedule, Schedule 5.

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[21] H. C. Spurr, Guiding Principles of Public Service Regulation, (Public Utility Reports, Inc., New York, 1924), p. 323.

SCHEDULE 5

Comparison of Rates of Return to Bond and Stockholders

		1947		1957
Rate Base (Valuation at date at reproduction cost)		$10,000,000		$20,000,000
Fair Rate of Return		6%		6%
Dollars of Return		$600,000		$1,200,000
Distribution:				
Bonds ($5,000,000 @ 5%	$250,000		$250,000	
Preferred Stocks ($2,000,000 @ 6%)	120,000		120,000	
Total Fixed Return		370,000		370,000
Balance to Common Stockholders		$230,000		$830,000
Return to Common Stockholders		7.7%		27.7%

From the above schedule, therefore, it is obvious that the common stockholders, alone, are the only beneficiaries of the reproduction cost basis of property valuation in a period of rising prices. Although the purchasing power of the bond and preferred stockholders has decreased 50 per cent, the purchasing power of the common stockholders has risen almost 100 per cent, their dollar income increasing almost 400 per cent. By the same token, a period of falling prices will reduce the purchasing power of the common stockholders, if not eliminate it entirely. In the preceding example, for instance, were the price level to drop 50 per cent between 1947 and 1957, the "fair return" of 6 per cent on reproduction cost would yield but $300,000, just barely enough to pay the interest charges to bondholders, much less provide any return at all to the common stockholders. The only advantage accruing to bond and preferred stockholders in a period of

rising prices under the reproduction cost basis of property valuation would be the additional security afforded to the payment of their fixed rates of investment return.[22]

The majority of the arguments for a cost of reproduction basis of public utility property valuations came as a result of the Smyth v. Ames case in which the Supreme Court considered numerous factors in arriving at the "fair return." Until this situation was further clarified by later court decisions, the main problem seemed to be whether reproduction cost or original cost should be taken as the starting point in arriving at the fair value on which to base rates. Prior to the "recent era," reproduction cost, decreased by depreciation and increased by an allowance for working capital and "going-concern" value, was taken as the fair value for rate making purposes. This value varied with changing conditions and its determination resulted in many costly court cases, unduly prolonged proceedings, and decisions unsatisfactory to both the utilities and the public-representing commissions.

The procedure involved in applying the reproduction cost basis usually commenced with an inventory of the properties actually used in public service. Upon establishing the properties to be considered the next step was to "reproduce" these properties by applying unit prices of material

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[22] Clemens, Op. Cit., pp. 152-153.

and labor to the component parts, such unit prices having been estimated by some means, the final acceptance of which was often disputed by both the utilities and the commissions. Here, it is obvious, was a major source of conflict. While the utility would be estimating quantities and prices which would give them a maximum cost of reproduction, the commissions, acting in the best interests of the public, would be striving for a minimum computation of the costs of reproduction. Similar objections were met when, once the cost of reproduction was determined, the allowance for depreciation was deducted. The utilities, naturally, wanted as small an amount of depreciation deducted as possible, limiting their calculations to "observed" depreciation and obvious wear and tear; however, the commissions wanted "reasonable" depreciation rates used which were accepted as standard throughout other industries. Similar controversies were apparently prevalent over the determination of the allowances for working capital and special allowances for "going-concern" value.[23]

Determination under these conditions obviously was unsatisfactory. The final determination would be at best a compromise, affording little protection for either the public or the investor through adequate rate regulation. In view of this controversy, the regulatory commissions and the

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[23] Troxel, Op. Cit., pp. 267-272.

courts began, in the mid-1930s, advocating a stable rate base, constantly available for consideration under varying economic conditions. As early as 1923, this problem was foreseen by Justice Brandeis in a dissenting opinion when he said that the rate base, when using an original cost basis of property valuation,

> "...would be ascertained as a fact, not determined as matter of opinion. It would not fluctuate with the market price of labor, or materials, or money. It would not change with hard times or shifting populations. It would not be distorted by the fickle and varying judgments of appraisers, commissions, or courts. It would, when once made in respect to any utility, be fixed, for all time, subject only to increases to represent additions to plant, after allowance for the depreciation included in the annual operating charges. The wild uncertainties of the present method of fixing the rate base under the so-called rule of Smyth v. Ames would be avoided; and likewise the fluctuations which introduce into the enterprise unnecessary elements of speculation, create useless expense, and impose upon the public a heavy, unnecessary burden."[24]

The change from reproduction cost to original cost as the accepted basis of property valuations came only after many years of turmoil and confusion. It was a result not only of accounting technological improvements necessitated by the chaos of the depression years, but also of the desires of regulatory commissions, both federal and state, to have some clear-cut method of controlling, analyzing, and

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[24] Southwest Bell Telephone Co. v. United States, 262 U.S. 276, 306-307 (1923).

justifying rates. One eminent professor expressed the general feelings of the mid-1930s when he said:

> "The attempt to regulate rates by reference to a periodic or occasional reappraisal of properties has been tested long enough to confirm the worst fears of its critics. Unless its place is taken by some more promising scheme of rate control, the days of private ownership under government regulation may be numbered."[25]

Although the primary purpose for which the original cost basis of valuation is mainly intended is to relieve the conjectural aspects of valuations for rate making purposes, there is evidence through court and regulatory commission decisions that indicates, fortunately, that the search for simplicity and certainty in regulatory rates has not become the end in itself. Regulation has not yet lost its capacity to take other economic facts into consideration or to deny the workings of a dynamic and ever-changing society. The problem of valuation, moreover, must be considered in light of fairness of return and other factors which, in turn, evolve into additional problems. Once a fair valuation has been determined, for example, the problem arises as to what constitutes a "fair return" on this valuation. This is the question to which consideration shall now be given.

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[25] J. C. Bonbright, Valuation of Property, (McGraw-Hill Book Co., New York, 1937), Vol. II, p. 1190.

CHAPTER IV

THE FAIR RATE OF RETURN

What constitutes a fair rate of return? The quest for a satisfactory answer to this long disputed question probably should start with the Smyth v. Ames case of 1898, in which the Supreme Court, as has already been discussed, offered a dual standard of reasonableness of rates. The Supreme Court declared in its conclusions that, although the public should be charged a rate that is reasonable and fair, the utility should be allowed to charge such rates that would permit a "reasonable return" to its investors. In the 59 years since this decision was rendered, the standards of reasonableness set forth have remained basic in principle although it has been no easy task for the regulatory commissions and the public utility companies to convert this plausible doctrine into a workable system of rate determination.

Although this doctrine has been quite difficult to follow and a workable system of rate determination often next to impossible to achieve, the courts and the regulatory commissions have indicated from time to time that certain rates of return were "fair," "reasonable," "not unfair," or "not unreasonable." A number of decisions, both federal and state, have been examined in order to determine any trend in the historical development of the idea of "fair return." The period examined, in this section, therefore, starts in 1936, the approximate date of the emergence of the original cost

theory of property valuations on a widely accepted and required basis, and concludes some 10 years later at the conclusion of World War II. The decisions rendered during this 10-year period, 1936-1946, were fairly numerous and allowed a few general conclusions to be reached as to the regulatory bodies' idea of just what constituted a fair rate of return during this period of historical development.

Opinion of Courts and Regulatory Commissions

By way of introduction to the feeling of the courts and regulatory commissions, the opinion of Justice Butler, in the Bluefield Water Works and Improvement Company v. West Virginia Public Service Commission (262 U.S. 679, 692.), rendered in 1923, stands out as an example:

> "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 to 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...it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the 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 in-

vestment, the money market, and business conditions generally."[1]

The following schedule, Schedule 6, shows the number of times a particular rate was mentioned by either the courts or commissions in their decisions affecting electric utilities.[2] In addition, Schedule 6 shows the average rate of return mentioned by years, thus giving some indication of the trend. The elctric utilities were chosen to be representative of all utilities in this particular analysis; however, it should be kept in mind that the electric utility has been regarded as perhaps the more stable of the utilities and it is quite possible that the fluctuations shown here in the rate of return deemed "fair" would be even larger in other types of utilities. It should be noted that there appears to be a uniform downward trend in the rate of return set as reasonable by the courts and commissions. This downward trend is evident for each type of utility: electric, water, gas, and telephone. The downward trend, of course, parallels the downward trend of interest rates during this period and possibly indicates, in addition, the effectiveness of regulatory control and uniformity which was established more concretely with the inauguration of the

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[1] Quoted in Glaeser, Op. Cit., pp. 386-387.

[2] See Appendix I for a listing of court and commission cases considered in support of Schedule 6.

stable rate base around 1935. Also, the utility industry was expanding and becoming more firmly established, accounting in large part for a reduced risk factor. One final reason for the downward trend quite possibly was the increased efficiency of operations which was brought about by regulatory control, geographical and financial combinations, and technological innovations, all of which aided in reducing the risk factor.

SCHEDULE 6

Electric Utilities

Rates of Return Indicated by Court and Commission Decisions

Year	5.00% to 5.49%	5.50% to 5.99%	6.00% to 6.49%	6.50% to 6.99%	7.00% to 7.49%	7.50% to 7.99%	8.00% to 8.49%	Mean for Year
1936			5	4	2		2	6.62%
1937			7	1				6.06
1938			6		2			6.25
1939			5	1				6.08
1940			5					6.06
1941		1	1	1				6.00
1942			1					6.00
1943	1	1	2	2				5.92
1944		1	4					5.90
1945	1	1	1					5.54
1946	2		1					5.33

A review of the rates of return which have been predominant in the past few years has indicated that, although the allowable rate has increased somewhat, it has not equaled the rise in return enjoyed by industry and, therefore, has relatively declined. The extent to which the fair rate of return may properly decline beyond the points now reached for

the various utilities in relation to similar-risk industry and its low debt ratio is uncertain; further, to what relative level such return may drop, yet continue to attract needed capital, can be determined only by experience. However, it appears improbable that a continuous flow of venture capital into the regulated utility industry can be maintained at levels much below the present levels unless the return on capital placed in unregulated areas declines to a materially lower level than has been maintained for the past decade. Other conclusions, however, should probably be deferred until further considerations of the factors which determine what the "fair rate of return" is can be presented.

The determination of the rate base has been the subject of such controversy that, in the process of valuing property for rate making purposes, less emphasis has been placed on the rate of return. The Smyth v. Ames case emphasized property valuations as the basis for determining reasonable earnings and, thus, for many years the problem paramount was this one of valuation. However, once the basis was determined the courts and commissions frequently rested without consideration of the fairness of the total return. The factors, it is admitted, which constitute a fair rate of return are no doubt abstract and intangible, lending themselves quite unhandily to the enormous tasks which face utility commissions in the course of regulating the present large numbers of utilities. The "sacred 6 per cent," or

some other common return on a predetermined rate base, simplifies the regulatory process. This viewpoint, in light of the giant administrative task, is somewhat justifiable; however, ideally other considerations such as the cost of capital, debt-equity ratios, business conditions, risk, and management should also be prominent, just as much, in fact, as the determination of the rate base itself.

Component Factors of the Rate of Return

Interest and Risk. The content of the rate of return has been broken down into four major factors. The first of these factors, pure interest, should probably be considered along with the second, which is the risk factor. If there were no risk involved at all, then the fair rate of return would be the prevailing rate of interest on the highest grade of securities, such as government bonds. Although this rate may fluctuate periodically, it will in essence remain stable. The noticeable difference, therefore, between the rate of interest paid on riskless investments and the rate of return paid by the public utility is, in large part, compensation to the investor for the risks involved. The risks which are assumed by the investor include such items as competition between types of utilities, gas and electric utilities for example, general recessions or depressions, errors in judgment by management, population shifts, municipal ordinances, court and commission orders, fraud, and factors of obsoles-

cence. As an example of the element of risk, a petition of the American Telephone and Telegraph Company before the Virginia State Corporation Commission indicated that the cost of debt, which bears considerably less risk than equity, is approximately 3.5 per cent, while the risk-bearing equity costs a minimum of 9 per cent.[3] The difference of 5.5 per cent represents in large part compensation for the additional risk factor involved. This percentage is even larger when it is recognized that the cost of debt, 3.5 per cent, contains some compensation for risk factors in addition to pure interest.

Floatation Cost. The cost of transferring money, the floatation cost, is recognized as the third major factor to be considered in a fair rate of return. Frequently, these costs are quite substantial and add heavily to the cost of capital. These expenses, which are applicable to both debt and equity capital, include broker and underwriter fees, legal and accounting fees, printing and engraving costs, and many others. These costs add to the annual average cost of debt and equity capital and are usually amortized over the life of the securities. In addition, these costs must be recovered through the fair rate of return in order to pro-

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[3] Testimony of Mr. William F. Johnson, Assistant Vice-President of the Chesapeake and Potomac Telephone Company, Re: Application of the Chesapeake and Potomac Telephone Co. of Virginia for increase in rates, July 17, 1957.

vide the necessary returns to the investor and to maintain a constant flow of investment capital.

Social Costs. The fourth element in the make-up of a fair rate of return might be termed the "social" costs. This term is quite abstract yet exceedingly important. One of these social costs is the tax structure, including not only certain taxes not includible as utility operating expenses and consequently payable out of the return itself, but also the individual income tax. The charge is frequently made that the severe rates of the personal income tax have, for all practical purposes, wiped out the capacity of individuals with large incomes to save. The reason for this widespread conviction is, of course, easy to understand. The increase in personal income tax rates since the 1920s has been so great that on superficial examination they appear to afford prima facie evidence of this conviction. Besides curtailing the investment capacity of individuals, taxes could restrict the supply of funds which individual investors are able and willing to invest in business equities by reducing the incentive for individuals to risk their funds in such investment without a corresponding increase in the return. For some investors, moreover, even this increased yield on equity capital (and increased cost of capital to the public utility which must be borne by the rate of return) may be reduced below those yields available from some types of low-risk investments such as government bonds, savings accounts, and

life-insurance policies. This reduction (or even reversal) in after-tax yield differentials causes many investors with income or capital preservation as an investment objective to shift part of their funds out of, for example, utility common stocks and into lower yield investments because they do not regard the income yield remaining after taxes from higher yield securities as adequate compensation for the risks of capital loss inherent in their ownership.

There are, of course, other "social" costs involved in the fair rate of return besides taxes, although taxes play an important role in determining the availability and cost of capital and in establishing a final return of some reasonableness. A contribution to surplus to cover contingencies or to record prior losses may be considered in the present fair rate of return. Further, some recognition of high quality service and low rates can be given to the utility by allowing a somewhat higher rate of return than would be allowed to a poorly managed company which gave poor service and charged high rates. In general, such economic, social, and political factors all enter into the determination of a fair return. As abstract as their determination might be, they nonetheless are as important a consideration as the establishment of the "fair rate base."

CHAPTER V

THE PRICE LEVEL ADJUSTMENT PROBLEM

The discussion thus far has indicated the existence of two different theories relative to the establishment of a rate of return which is considered equitable. Historically, the first approach was to evaluate the plant and property of the utility in order to determine a fair rate base to which an established rate could be applied. Thus, as the value of the dollar should decrease or increase, the change would be considered in establishing the rate base, not the rate itself. For example, should the rate of return arbitrarily, or through precedent, be set at 6 per cent, and the plant and property be valued at $10,000,000, a fair rate of return would be indicated to be $600,000; however, should the dollar value fall, say 50 per cent, then the fair rate of return, maintaining the 6 per cent rate, would be applied against a rate base altered to reflect the rise in the price level. In this illustration the base would be doubled to $20,000,000 and the 6 per cent rate would yield a return of $1,200,000. Some of the obvious inequities of this method were pointed out earlier, as were some of the controversies and confusions which resulted from the determination of this rate base. Later, some 35 years after the Smyth v. Ames case which had advocated the above method, the theory of maintaining a stable rate base and altering the rate of return itself as

economic conditions changed was established and generally followed by the courts and regulatory commissions. In theory, as the price level rises, 100 per cent for example, instead of altering the rate base, the rate of return would be adjusted to a higher level to compensate for the loss in purchasing power. It is unfortunate, however, that in a considerable number of instances the regulatory bodies accepted the theory of the stable rate base but failed to give effect to any substantial increases in the rate of return itself, maintaining both on a relatively stable basis. In essence, current practice is to base the rate of return, established by at least some consideration of capital costs and expected yields, upon original cost as the stable rate base. In other words, if a 6 per cent return is deemed adequate and fair, and the original cost of plant properties were $10,000,000, and operating expenses (including depreciation based upon original cost) amount to $300,000, the rates must be established to return at least $900,000 of gross revenue per year. This is supposed to pay all operating costs adequately plus the fair return of 6 per cent on the stable rate base.

Examination of Changes in the Price Level

In view of the extreme rise in the level of prices during the last 20 years, increased attention has been given to a variation in this theory of the stable rate base and

rate of return. It has been proposed, and vehemently argued, that, although an established return on the stable rate base is both easily regulated and fairly determinable, the operating expenses should include depreciation charges based upon replacement cost and not original cost. The effect of this theory would be, of course, to guarantee adequate enough gross income to not only provide a "fair" return such as the above 6 per cent, but also to maintain the integrity of the investment of capital through appreciation equivalent to the rise in the price level and, similarly, the decline in the value of the dollar. The effect of the rise in the price level without adjustment in depreciation charges from original cost to reproduction cost can be readily ascertained from Schedule 7, which appears on the following page.

This schedule shows how the dollar incomes of the various utilities considered increased from 1940 to 1953; however, it also shows how the real dollar incomes have decreased despite the sometimes enormous increases in dollar income. In the case of the Bangor Hydro-Electric Co., for example, their earnings of $1,228,000 in 1953, although an increase of 119.3 per cent over their 1940 earnings in terms of dollars, actually earned but 40.9 per cent of their 1940 earnings in terms of dollar-value or purchasing power. Two of the companies shown on this schedule do show an increase of real earnings; however, this increase was not as large as the dollar figures might indicate. The General Telephone

SCHEDULE 7

Study of Fourteen Public Utilities[1]

Comparison of the 1940 and 1953 Incomes

Company	Income for 1953 (thous)	1953 Income As a Per Cent of 1940 Income	1953 Income As a Per Cent of 1940 Income Converted into 1953 dollars[2]
Bangor Hydro-Electric	$ 1,228	119.3%	40.9%
Carolina Telephone and Telegraph Co.	2,431	623.2	273.6
Cleveland Electric Illuminating Co.	16,897	172.6	60.4
General Telephone Co. of Indiana	1,365	253.3	95.4
General Telephone Co. of Pennsylvania	1,835	277.1	114.9
Kentucky Utilities Co.	6,801	211.3	79.2
Michigan Bell Telephone Co.	24,159	204.7	59.8
The Narragansett Electric Co.	4,760	142.0	70.9
New Jersey Power and Light Co.	2,105	115.1	41.8
The Peoples Gas Light and Coke Co.	8,906	174.5	63.7
Southern California Edison Co.	29,800	156.8	56.1
Utah Power and Light	7,033	147.4	57.3
Wisconsin Public Service Corp.	5,767	186.2	65.9
X Power Co.*	31,033	197.1	72.2

* Name withheld at request of company.

[1] Harold Bierman, Jr., "The Effect of Inflation on the Computation of Income of Public Utilities," The Accounting Review, April, 1956, p. 261.

[2] The wholesale price index was used by Dr. Bierman in the computation of the depreciation adjustments and conversions into common dollars.

Co. of Pennsylvania, for example, shows an increase in dollar income of 277.1 per cent, but their increase in real earnings was only 114.9 per cent, considerably less than might be expected if no adjustment to a common dollar basis had been made. The statisticians and the lay public are not the only ones guilty of this fallacy in reasoning and observation, but the same thing is done daily by the accountants. Under no circumstances would one Russian ruble and one United State dollar be added together without conversion into a common denominator, just as it would be impossible to add apples and oranges together without some means of expressing the result in some understandable and logical manner. It is, however, common practice to add one 1940 U.S. dollar to one 1958 U. S. dollar, the values of which are distinctly different, and call the resulting sum "two dollars." This has as much meaning as adding one apple and one orange, and calling the result "two oranges."

Effect of Price Level Changes Upon Public Utilities

This problem is illustrated emphatically in the utility industry since the great bulk of their capital investments are in depreciable fixed assets unlike most industries whose capital investment is predominantly located in inventory and merchandise and will be sold before too great an effect will be realized from the changes in the price level. A utility, for instance, which constructs a plant in 1940 at a cost of

$10,000,000, decides to expand and constructs an additional plant in 1958 at a cost of $20,000,000, the two plants being alike in every respect. Without making any adjustments for changes in the value of the dollar, depreciation charges, assuming the rate of depreciation to be 5 per cent, will amount to $1,500,000 in 1958, computed by adding the original cost of the old plant to the original cost of the new plant and applying the depreciation rate of 5 per cent. First of all, this is mathematical knavery and has extremely little real meaning. In fact, what is happening is that the investors who financed the original plant are watching their equity slide away at the rate of 5 per cent per year and eventually, assuming the price level to either continue to rise or remain constant, will find their equity becoming practically non-existent. Further, the rate of return, fairly computed, has not allowed compensation to the investor for his loss of equity in terms of purchasing power. Should some enterprising public utility, aware of this inadequacy in accounting and rate setting, prepare adjusted financial statements for the guidance of management, it would find that an appreciable portion of the income previously reported would be diverted to the additional (and real) depreciation charges leaving an extremely inadequate amount for the capital payment requirements. Were our monetary system stated in terms of oranges instead of dollars, the inadequacy certainly would receive consideration. Assume oranges to be twice as

valuable as apples. An investment of 100 oranges into a business venture must be recouped in terms of oranges, not apples, before any net gain or profit results.

Dr. Glaeser, of the University of Wisconsin, raises the further question of constitutionality of denying investors the protection of their real investment:

> "Under the Fifth and Fourteenth Amendments, are they entitled only to the protection of the 'dollar amounts' of their investment, or does the Constitutional protection extend also to the 'real values' of these investments?"[3]

Of course, the Fourteenth Amendment was never legally ratified by the States and therefore cannot be logically considered.[4] Further, the problem appears not to be one of constitutionality but rather one of providing adequate protection and returns to investors in order to attract and maintain a flow of private capital into the public utility industry, in order to meet the continuing demands of expansion and high-quality service to the public, and, it might be added, to prevent government ownership and all the implications attached to such a step. Some consideration of the arguments for and against price level adjustments, on economic grounds alone, then, should be presented at this time.

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[3] Glaeser, Op. Cit., p. 393.

[4] James J. Kilpatrick, The Sovereign States, (Henry Regnery Co., Chicago, 1957), pp. 258-277.

Arguments for Price Level Adjustments

One of the arguments for the use of an adjustment for price level changes, especially in adjusting the depreciation charges, is that, by definition, net income or net loss is a residual after subtracting current operating expenses from current operating revenues. If revenues are in units of a current inflated dollar then, to make the net income figure meaningful, it is necessary to subtract operating expenses of the same monetary unit. Or, as stated by Dr. Harold Bierman, "if depreciation is to measure a cost of operations, it must be expressed in dollars of the same purchasing power as the revenues earned during the period."[5] Depreciation charges based upon original cost are not the same type of dollars as the revenue dollars earned during the present period. It is to be emphasized, however, that this advocated adjustment in depreciation charges is not related in any way to replacement or reproduction cost. Depreciation as such is simply a measure of cost and does not attempt to allow the utility to replace its assets upon expiration. The purpose is to restate the depreciation charges so that they will reasonably approximate actual cost in terms of dollars with equal purchasing power as those of which the

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[5] Harold Bierman, Jr., "Capitalization of a Public Utility and the Measurement of Income," The Accounting Review, January, 1957, p. 21.

original investment was comprised.

The remaining primary argument advanced for the use of price level adjustments consists of the social and managerial effects of changes in the value of the dollar. One of the main objectives of accounting has long been recognized as being the significant presentation of financial facts regarding operations and conditions to management for its use in making decisions and electing alternative courses of action in such a manner as to maximize profit and the utilization of resources. Management decisions governing dividends, wage negotiations, expansion programs, and so forth, are all predicated upon accurate and meaningful accounting data. Although management is presumably cognizant of the change in the price level, its "correct" decisions can probably be facilitated by the incorporation of these adjustments into the accounting reports. Not only has the accountant's responsibility been directed toward management to provide usable data, but there is also the inherent social responsibility existent to the rate-paying public and the investor to at least inform them of existing inadequacies in accounting simply for these dollars. Every opportunity, it is argued, should be given to the investor to maintain the integrity of his investment and in order to grant him this opportunity it

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[6] George H. Warner, "Depreciation on a Current Basis," The Accounting Review, October, 1954, pp. 630-631.

is necessary to present the real facts as to the results of operations in terms of purchasing power. When it is seen that the utility, through an inadequate rate of return, is not affording the capital protection he desires, the only alternatives are to relocate the investment or to press for higher returns to compensate for the loss in purchasing power. To prevent the relocation of needed capital investment in the public utility field, it is contended that some allowance must be made in the depreciation charges so that they will more accurately reflect the true costs of operations and consequently provide a sufficiently attractive yield through higher rates of return.

Arguments Against Price Level Adjustments

The most frequently heard argument against a price level adjustment in depreciation charges is that it is not necessary to attract additional capital. Although it is true that utilities have had little trouble in disposing of their securities, there is nevertheless the fact that, with a price level which is not progressing in the short run as it has over long run periods, the expectation is that current investment will be protected. However, the investors who entered the utility field some years ago are finding their investments less well protected; and, even present investors may find price level changes detrimental to their futures as present investors.

It was pointed out earlier in this study in the arguments posed against the use of the reproduction basis of property valuation, that the common stockholder would be the only one receiving any great benefit from the increased rate base in a period of rising prices, other than the added security to fixed income bond and preferred stockholders. The same argument is raised in the case against price level adjustments in determining the rate of return. Such adjustment would tend to favor and protect the holders of common stock but would have no effect on the holders of fixed income securities except to further assure them of payment. In an article appearing in the Journal of Land Economics, it was stated that the decline in the value of the dollar is:

> "grievously unfair and disorderly in its impacts on different classes of people. But on the other hand, any attempt to save one particular class against its inequities runs the risk of imposing even more cruel burdens on unprotected classes. It also runs the risk of adding fuel to the inflationary fire.
>
> "Both of these criticisms can fairly be made against the escalator clauses in the recent union-wage contracts. They can be made with even greater force against escalator provisions in public utility rate control. Of necessity these provisions can redound to the benefit of only one class of investors - the holders of common stock. Of necessity, moreover, the burden of protecting these stockholders would fall on consumers in general, including those consumers who have been unable to provide themselves with escalators. The problem, then, is that of choosing whichever form of unfairness is the least unfair."[7]

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[7] James C. Bonbright, "Public Utility Rate Control in a Period of Price Inflation," Journal of Land Economics, Vol. 27, February, 1951, p. 16.

Opinion of Courts and Regulatory Commissions

As a general rule, the courts and regulatory commissions have held that the price level depreciation adjustment was not allowable and that consideration of changes in the price level was afforded in the determination of the rate of return. It is significant, however, that certain quarters are putting into effect some recognition of the price level change, either through the use of current dollar accounting or through the use of reproduction cost as a rate base. The Indiana Public Service Commission, early in 1957, granted permission to the Indiana Telephone Corporation to accrue depreciation on the basis of current dollar values and, in addition, permitted the company to show the accrued depreciation on their annual report on both the original cost basis and the adjusted basis.[8] Along these same lines, and in consideration of the change in the price level, the Iowa Supreme Court affirmed an Iowa District Court decision of 1955, which ruled that the Iowa-Illinois Gas and Electric Company was entitled to gas rates which were based on fair value of plant and equipment, taking into consideration both current value and the original cost. The court held that, although over the short run changes in the price level give no cause for adjustment, a permanent and noticeable one, such as has been evident

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[8] "News Report", Journal of Accountancy, July, 1957, p. 8.

since 1939, affords cause for revaluation of the rate base to relieve some of the obvious inequities.[9] The general court and commission feelings, however, are typified by the recent New York State Public Service Commission's denial of the request of the New York Telephone Company to use reproduction cost as a rate base. Although the company was prevented from employing this method of property valuation to justify increased rates, it was granted a substantial rate of return increase, from 6 per cent to 6½ per cent, to compensate for the loss in the value of the dollar and general current economic conditions.[10]

Conclusions on the Price Level Adjustment Problem

It has been seen that the reproduction cost consideration in determining a "fair rate of return," as proposed and emphasized by the Supreme Court in the Smyth v. Ames case, led to many almost insurmountable problems. In order to solve these problems, or at least make rate regulation come within the realm of practical application, the courts and commissions resorted to the stable rate base, original or historical cost, and a fluctuating rate of return. Until the

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[9] "News Report", Journal of Accountancy, December, 1957, p. 14.

[10] "News Report", Journal of Accountancy, November, 1957, p. 16.

Hope Natural Gas Company case, in 1944, the courts and commissions had advocated some sort of determinable, formula-like method of setting rates.[11] Since that time more and more consideration has been given to economic changes in the price level, although for ease of regulation and computation, original cost has been the predominant rate base. If current court cases and commission decisions are indicative of the trend, then it would not be surprising to see reproduction cost as a factor in rate making return to prominence, or at least some recognition in the form of price level adjustments of the decline in dollar values.

The extreme and assumably permanent change in the value of the dollar over the past 15 to 20 years has necessitated additional consideration of the accounting techniques. It is impossible to ignore the wide discrepancy between original cost and reproduction cost, either by the investors or by management. Howard Greer, some 10 years ago, gave a reasonable explanation for the desires of realistic utility and industrial management to recognize the change in the price level:

> "What many business men and accountants really fear is not that their statements will distort the facts, but that they will give unscrupulous readers of the statements an opportunity to derive or spread imperfect conceptions of what is going on. Business men

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[11] Hope Natural Gas Co., 320 U.S. 591 (1944).

> would welcome some device introduced into financial statements which will produce a result that cannot be used against them in discussions of prices, wages, rates, taxes, or profit. They would like to have the statements constitute both a measurement and an interpretation - the interpretation being favorable to the economic attitudes which they find inescapable."[12]

Naturally, a return to the reproduction cost basis of property valuation would lead to problems and confusions such as those existing during its original adoption. Further, increasing depreciation charges to a replacement basis is really a subterfuge which conceals an item of inflation expense in a charge which is intended to represent amortization of cost. It's dishonest accounting. If an expense provision is to be made for price level changes, it should be so tagged, and not concealed as something else. Supporters of this theory apparently are convinced that accountants and management prefer to take the route of dishonest accounting rather than subject themselves to the criticisms that would arise from an open statement of "inflation expense" as an operating charge.

The alternative, taking original cost as a rate base, gives no consideration of the changes in the price level. There is becoming, however, increasing popularity attached to a third alternative, that of restating the original investment in a utility plant in terms of current dollars, or purchasing power. This approach would at least avoid the time

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[12] Howard Greer, "Depreciation and the Price Level," The Accounting Review, April, 1948, p. 130.

and expense of a detailed inventory of plant items and the application of reproduction prices which would be, to say the least, difficult to ascertain or defend. The problem arises here, however, in the method which is used to revalue original investment in terms of current dollars. This problem will, of necessity, have to be reconciled before this proposal would be accepted without exception by the courts and regulatory commissions. When the problems inherent in regulation of utilities, such as those apparent in the use of reproduction cost and price level adjustments, are resolved, then it is felt that many benefits will accrue to the utility investor of which he has long been deprived.

In summary, present day conclusions and objectives were aptly expressed by Dr. Martin Glaeser some 30 years ago when he said:

> "The most telling argument which has been brought forward by those who champion cost of reproduction, either as the sole standard of value or as an important element in fair value, takes this form. Unless cost of reproduction is taken into account in rate base determinations, the owners of public utility properties will be deprived of a fair rate of return. Periods of high prices, particularly those induced by war and reconstruction disturbances with their attendant monetary inflations, usually are accompanied by a fall in the purchasing power of that return. A constant monetary return under these conditions represents, in fact, a declining return which is the complement of the decline in its purchasing power. This argument has unquestioned economic merit. It addresses itself, however, to the question of what is an adequate return under such circumstances. Everyone, even the economically illiterate, have learned that the economic value of money resides in its purchasing power, its power in exchange for commodities and services. The rate of

return should therefore be made flexible to correspond with some index of purchasing power. If the choice is between a relatively fixed rate of return which is applied to a rate base varying with the cost of reproduction, and a rate of return varying with some index of purchasing power which is applied to a fixed rate base, it is easier to choose the latter alternative. To commit regulation to the cost of reproduction standard is sure to have consequences that are far-reaching in unsettling the machinery of regulation and in disturbing the accounting and credit structures of going concerns.

"Administrative commissions should, therefore, take steps to make the rate of return flexible, and, particularly, to make the amount available as a return upon the risk capital of public utilities bear some constant relation to the varying purchasing power of the most fundamental of all standards of pecuniary value - the dollar."[13]

It is concluded, from the views of Dr. Glaeser and the more recent decisions of courts and commissions, that additional considerations must be given to the change in the value of the dollar if we are to preserve an equitable system of private ownership of public service properties. As a further result, proper utilization of financial reports, both for managerial, regulatory, and investment purposes, places an obligation for a closer working arrangement between the fields of accounting and economics than has to date been evident.

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[13] Martin G. Glaeser, Outlines of Public Utility Economics, (MacMillan Co., New York, 1927), pp. 479-480.

CHAPTER VI

DEPRECIATION METHODS

The role which is played by depreciation in arriving at the rate base or in determining the fair rate of return has already been pointed out. In addition, some of the problems involved in the use of depreciation have also been presented. This chapter will ignore the problems of its use in deductions to arrive at the rate base as well as the price level adjustment problem involving "equitable" depreciation charges. Instead, consideration will be directed toward the computation methods of determining depreciation charges and the accounting treatment involved. The many theoretical ramifications involved in accounting for and determination of depreciation, of necessity, place limitations on its discussion in this paper. Practically speaking, the discussion, therefore, must be confined to a historical survey of the developments in this area and a summary of present-day depreciation methods and techniques.

Historical Survey

Assets have, because of their instability throughout the annals of time, depreciated, become obsolete, eroded, or in some fashion, expired so as to become eventually useless. This physical phenomenon has existed since the beginning of time; however, it has only been in relatively recent years

that any recognition of this fact has been made in any formal manner.

With the possible exception of land, all productive facilities are depreciable assets. They depreciate with time and use, and are subject to obsolescence with the appearance of new techniques and new products. Whatever the particular combination of these factors of wear and obsolescence, which varies widely from asset to asset, the end result is identical; the capital investment in the facilities is exhausted over their productive service lives. It follows that capital consumption is an inescapable cost of operations, and no net gain or profit results until this cost has first been recovered.

While the depreciation of fixed assets must always have been recognized in some fashion by business management, the practice of making regular periodic charges for capital consumption is a development largely of the last 50-odd years. Prior to this development little attention was given to periodic charges but rather to single venture cost and profit as shown by comparing the beginning balance sheet with the ending balance sheet. A. C. Littleton said that little consideration was given to factors of profit and loss because the chief interest lay in the analysis of the capital accounts. He said that:

> "...this was the center of the interest of partners, shareholders, lenders, and the basis of the calculation of early property taxes. Thus, bal-

> ance sheet data were stressed and refined in various ways, while expense and income data were incidental - in fact, the latter in the seventeenth century were presented merely as a 'proof of estate' - to demonstrate by another route the correctness of the balance sheet."[1]

Under the informal accounting methods of the earlier period in the history of depreciation accounting, a good deal of the expenditures for fixed assets were simply expensed as made, rather than spread over future years by the use of the depreciation account. At the other extreme was the practice, especially prevalent among public utilities, of charging off nothing until the retirement of the assets, their entire cost being absorbed against the income of the final year. An intermediate procedure was to charge off the cost of assets sporadically during their service lives by arbitrary amounts, and usually only in years of high profits.[2]

The measurement of a reasonable depreciation cost is a later regulatory problem than the problem of a fair return for investors.[3] Long after companies and regulatory bodies

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[1] A. C. Littleton, Accounting Evolution to 1900, (American Institute Publishing Co., Inc., New York, 1933), p. 153.

[2] Henry Floy, Valuation of Public Utility Properties, McGraw-Hill Book Co., New York, 1912), pp. 13-31.

[3] John Bauer, "Depreciation in Relation to Prudent Investment," Public Utilities Fortnightly, Vol. 33, April 22, 1944, pp. 540-553.

took reasonable-return disputes to the courts, the Supreme Court said nothing about depreciation expense as one determinant of reasonable rates and earnings. Depreciation cost was not even mentioned in the Smyth v. Ames decision of 1898.[4] Even for several years after the Smyth decision, the Supreme Court still did not recognize this cost as a necessary determinant of reasonable earnings.[5] The Supreme Court did not refuse to consider the depreciation costs of service but, as a result, neither the public utilities, which practiced retirement accounting, nor public utility commissions, which were confined chiefly to railroad regulation before 1910, brought depreciation disputes to the Supreme Court.

The right of industry to depreciation expense allowances was first stated in a public utility decision by the Supreme Court in 1909. This was done in the Knoxville Water Company decision.[6] Recognizing that a utility's plant "begins to depreciate in value from the moment of its use," the Supreme Court went on to say that:

> "...before coming to the question of profit at all the company is entitled to earn a sufficient sum

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[4] Smyth v. Ames, 169 U. S. 466 (1898).

[5] San Diego Land and Town Co. v. National City, 174 U. S. 739 (1899): San Diego Land and Town Co. v. Jasper, 189 U. S. 439 (1903).

[6] Knoxville v. Knoxville Water Co., 212 U. S. 1 (1909).

annually to provide not only current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. The company is not bound to see its property gradually waste, without making provision out of earnings for its replacement."[7]

After the Knoxville decision in 1909, and in later cases, the Supreme Court approved depreciation provisions not only for the use and wear of property, but also for the effects of obsolescence and inadequacy.[8] Likewise, the Court required a depletion allowance for the consumption of irreplaceable natural resources. In the Columbus Gas and Fuel case, where the depletion cost of a natural gas company was disputed by the Public Utility Commission of Ohio, Justice Cardoza said:

"To withhold from a public utility the privilege of including a depletion allowance among its operating expenses, while confining it to a return of 6½ per cent upon the value of its wasting assets, is to take property away from it without due process of law, at least where the waste is inevitable and rapid....Plainly the state must either surrender the power to limit the return or else concede to the business a compensating privilege to preserve its capital intact."[9]

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[7] Ibid., p. 13.

[8] Denver v. Denver Union Water Co., 246 U. S. 178, 191 (1918); Kansas City Southern Ry. Co. v. U. S., 251 U. S. 473, 448 (1913); Lindheimer v. Illinois Bell Telephone Co., 292 U. S. 151, 167 (1934).

[9] Columbus Gas and Fuel Co. v. Public Utility Commission of Ohio, 292 U. S. 398, 404, 405 (1934).

After the Knoxville case was decided in 1909, utility companies were expected to account fully for the depreciation of their plants. Industry, at this time, began following the utilities in respect to accounting for depreciation. The prevailing general philosophy was exemplified in the Supreme Court decision on the Knoxville case:

> "It is not only the right of a company to make such a provision but it is its duty to its bond and stockholders, and, in the case of a public service corporation..., its plain duty to the public.... If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired,...the fault is its own."[10]

When depreciation expense is measured now, the Supreme Court agrees with most accountants and public utility commissions. Since it approves an original cost or investment cost base for these charges, it also accepts the recovery of past investments as the main purpose of depreciation accounting. In both public utility commission regulations and the income tax laws the legal as well as the accounting concept of depreciation is consumption of the services of existing equipment and properties. The Supreme Court, like the accountants, regulators, and law-makers, does not see a provision for reinvestment as the main purpose of depreciation accounting. As a company recovers the original property cost

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[10] Knoxville v. Knoxville Water Co., 212 U. S. 1 (1909).

with depreciation charges against income, it may or may not accumulate enough cash or other liquid assets to pay replacement costs as they occur. This is a chance that the companies must take.[11] Although it is generally accepted that replacement is not the goal of depreciation accounting, it is felt by many that cost must be recovered in terms of purchasing power, not just in dollars. This comes extremely close to providing replacement costs through depreciation charges; however, even the technical difference, although minor in application, must at least be recognized in theory. This particular point appears to be the crux of the price level adjustment problem and exposes an entirely new accounting and economic area, an analysis of which is beyond the scope of this chapter. Instead, depreciation will be considered only in its pecuniary accounting concept.

Former Methods of Recognizing Depreciation Expense[12]

In the confusion prevalent during the early period of depreciation accounting, there were numerous methods of

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[11] J. Rhoades Foster and Bernard S. Rodey, Jr., "Thoughts on Depreciation Accounting," Public Utilities Fortnightly, Vol. 47, No. 4, February 15, 1951.

[12] Information in this and subsequent related sections was obtained from The Report of Committee on Depreciation, National Association of Railroad and Utilities Commissioners, 1943, pp. 3-7.

charging expense with the cost of depreciable properties. As a result of this confusion and lack of uniformity, the subject has remained one of considerable controversy; however, the methodology has been perfected, in relatively recent years, to a point of acceptability and these former methods are now looked upon with some amusement since they were evolved upon extremely little logic and were vehemently defended.

Retirement Method

The purchase of utility plant and equipment, under this method, was entered into the asset account, to remain there over the useful like of such plant and equipment. When the properties were ultimately retired, the entire cost would be charged to expense of the period in which the asset was retired. This method could not, of course, properly match current revenues with current costs. During the periods when the property was useful and used, the earnings were highly overstated and, by the same token, the earnings were grossly understated in the period which assumed the expense of the retired property. Only after acquisition and retirement over a long period of time would the retirement expense ever come close to representing true depreciation expense, and then only by pure chance.

Appraisal Method

Under this method, the properties were recorded on the

books at cost and periodic appraisals, usually of an engineering nature to determine "obvious" depreciation, were taken to ascertain expiration of the property's value. In periods of rising costs it was often the practice to observe the depreciation expense by recording the difference between the appraisal value of one period and the appraisal value of the next period, giving no consideration to original cost. This method was detailed and costly, and its results were often the subject of much dispute.

Arbitrary Writedown Method

In the early development period of depreciation methods it was common practice to recognize depreciation in the accounts by methods which were quite arbitrary. Few scientific appraisals were made and depreciation was recognized usually in periods of good profits and ignored in periods of poor profits. The goal was to have completely depreciated the property by the time of its retirement; however, constant or scientifically determined depreciation charges were not made and, instead, arbitrary charges were employed to write off the property's value.

Replacement Method

The original purchase of plant and equipment, under this method, was recorded on the utility's books to remain there indefinitely. Whenever a property was retired and re-

placement made, then the cost of replacement was recorded as an operating expense, or depreciation charge as it were. This method violated the basic concept of depreciation accounting, that of charging to operations that portion of the cost of property which has been used in operating the business. As a result, depreciation charges under the replacement method have little or no relation to actual cost and could not, therefore, provide an accurate measurement of periodic profits. Another fault of this method is that not only are profits distorted because of the lack of relationship between actual cost and the depreciation charges computed, but also these profits will be dependent upon the amount of replacement that is effected, further preventing accurate or even reasonable income determination.

Retirement Reserve Method

During the development of depreciation accounting, the above mentioned weaknesses became apparent to many accountants. Making an attempt to correct these faults, they evolved the replacement reserve method which is, basically, a combination of replacement accounting and reserve accounting. When replacements of similar properties were being made continuously then, as under the replacement method, the entire cost of replacement was charged to operations and the original cost was maintained on the books intact; however, when, through technological improvements and for other reasons,

properties were not replaced, or replaced by vastly different properties, the original cost of the properties was charged to operations by the reserve method which is commonplace today. The exception, though, was that the periodic charges to the property reserves were not scientifically determined nor did they bear any direct relationship to actual costs of the expiring properties during a particular period. Hence, this method, although recognizing some of the inherent faults of other methods, retained one of the greater weaknesses and still could not properly match income and expense.

The National Association of Railroad and Utilities Commissioners provided the most influential support of the retirement-reserve method when it issued its manual in 1922. While this method ceased to be acceptable by commercial and industrial companies with the passage of the 1913 Revenue Act, it remained popular with public utilities for another 20 years and apparently still continues to be used today although on a vastly reduced scale. The support given to this method by the NARUC in 1922, has been so effective that its provisions bear quoting. The Retirement Reserve Account was described as follows:

> "To this account shall be credited such amounts as are charged to operating expense account 'Retirement Expense,' appropriated from surplus, or both, to cover the retirement loss represented by the excess of the original cost, plus cost of dismantling, over the salvage value of fixed capital retired from service. When any fixed capital is retired from service, the original cost thereof (estimated if not known, and where estimated, the facts of which the estimate is

based should be stated in the entry) should be credited to the proper fixed capital account and charged, plus the cost of removal, less salvage, to this account. If the credit balance in this account is insufficient to cover the retirement loss, the excess over the balance contained in the reserve should be charged to Account No. 132, 'Property Abandoned,' which see, or other appropriate account.

"The losses which this account is intended to cover are those incident to important retirements of buildings, of large sections of continuous structures, like electric line, or of definitely identifiable units of plant or equipment, and the purpose of the account is that the burden of such losses may be as nearly as is practible equalized from year to year, but with due regard for amount of earnings available for this purpose in each year."[13]

Without engaging in a detailed comparison between retirement-reserve and depreciation accounting methods, the most apparent inadequacies of the retirement-reserve method may be summarized in the following manner. First, the reserve does not measure accurately the expired portion of the useful life of plant and equipment since the reserve is considered to be adequate if, at any time, it is large enough to absorb all retirements planned within a few years. Second, it ignores the well accepted concept of including capacity costs of plant and equipment as a relatively fixed and regular cost in the proper matching of revenue and expense to arrive at net income. Third, replacements of like property are charged to operating expense while the costs of the original properties, though retired, remain in the fixed

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[13] Report of Committee on Depreciation, NARUC, 1943, p. 17.

asset accounts. Last, the charges to retirement expense are highly irregular and bear little relation to actual cost.

The current trend, however, is toward the use of depreciation accounting, the retirement-reserve method no longer being classed as acceptable by the NARUC, regulatory commissions such as the FPC, FTC, and the ICC, and most state utility commissions. Of course, these same bodies, especially the NARUC, played an important and almost devastating role in the initial adoption of this plan. One distinguished writer in the field of accounting has summed up the situation with respect to the retirement-reserve method and the role of the NARUC by saying:

> "...no history of depreciation accounting can ignore the significances and far-reaching effects of this action of the NARUC. The dilemma which the commissions faced has been recognized and may to some extent explain the action taken. The rule laid down was no doubt favored by a great majority of utility corporations, as it was perhaps more likely than a cost amortization rule to encourage new utility development. But in any retrospective judgment upon retirement-reserve accounting, the influence of this endorsement of it, given after long study at a time when the significance of cost amortization procedures had been fully recognized in tax laws and in general accounting practice, cannot be over-estimated. The NARUC must accept a large share of criticism that may be directed against the method of accounting and the results which it produced. It was not until 1936 that it advocated depreciation accounting. In a report made by its committee on depreciation in 1937 the partial responsibility of the NARUC, for what the committee then regarded as inadequate depreciation provisions, was definitely recognized."[14]

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[14] George O. May, Financial Accounting, (MacMillan Co., New York, 1943).

Thus, the NARUC abandoned the retirement-reserve method in 1936 and, in the Report of the Committee on Depreciation, in 1943, stated that, "the retirement-reserve method has little or no sanction today as a satisfactory means of accounting for the consumption of service capacity of plant assets...."[15] Along with the retirement-reserve method, of course, the earlier schemes were also scuttled. The Committee report of 1943 goes on to say that:

> "In the earlier days inventory accounting, retirement accounting, and retirement-reserve accounting were the chief schemes for accounting for plant consumption. Today those methods are completely outmoded and depreciation accounting is the well-nigh universal method of accounting for the exhaustion of capital investments of the nature discussed in the Report."[16]

Current Methods of Recognizing Depreciation

That depreciation is a cost of operations is a premise that even the former methods of computation admitted; however, the manner in which this depreciation was recorded has been the subject of much controversy. Currently it is quite unanimously agreed that the significant features of depreciation are that it is a cost of producing service and that it

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[15] Report of Committee on Depreciation, NARUC, 1943, p. 7.

[16] Ibid., p. 23.

arises out of the expiration of the service life of plant and equipment resulting from forces such as wear and tear, decay, action of the elements, inadequacy, obsolescence, and change in public requirements. This point was recognized by the NARUC in their committee report of 1939. The relevant section is worth quoting in full:

> "From an economic standpoint, there is no difference between the consumption of fuel under a boiler and the consumption of the boiler itself, except in the point of time and in what is visible. The fuel is consumed by a single use, the boiler by many uses. The fuel is consumed both physically and economically, and this is a readily observed process. The boiler is consumed economically in that its service capacity is gradually diminished through use or by other forces which lead to its eventual retirement. The physical consumption of the boiler is not so apparent. That is, its physical dimensions are not reduced. Nevertheless, an exhaustion of service capacity is taking place when the boiler is viewed not as so much metal but correctly as a piece of equipment designed and constructed to serve a productive purpose and that a time comes when the boiler will no longer be useful for this purpose. Consequently, during its service life, the boiler as well as the fuel burned under it is being consumed in the production of energy, which contributes to some form of output.
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> "That the fuel consumed is a cost of operations has never been questioned. The same logical deduction applies to the cost of the boiler. Since it cannot be used forever, its cost less net salvage should be included as an expense of operations. The output of the boiler must be charged with both the fuel and the equipment consumed in its production if full costs are to be ascertained."[17]

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[17] Proceeding of the Fifty-first Annual Convention of the NARUC, 1939, p. 339.

The importance, then, of recognized depreciation cannot be underestimated. There is very little difference in depreciation charges and any other charges incurred in the normal operations of business. It is just as necessary to incur costs of plant and equipment consumed as wages or materials. Further, in the words of Professor W. A. Paton:

> "...the statement that depreciation is not an out-of-pocket cost is questionable, to say the least. As a matter of fact depreciation represents the extreme example of prepayment. Expenditures for labor and materials are made on a day-to-day, month-to-month basis; the cost of plant is incurred in advance for years at a stretch. Let no one be misled on this point. The cost of plant is an actual cost and by the same token depreciation is a thoroughly valid operating charge. There is also little or no basis for the notion that depreciation is less likely to be recovered in revenue than other costs."[18]

Originally, when depreciation expense was first accepted as an operating cost, the charge was credited directly to the fixed asset accounts. Although this method showed the expiration of a certain cost of the asset, it did not disclose the accumulated depreciation, the cost of the asset, or other information concerning the method of computation. As a result, the reserve method was generally adopted, primarily because of mechanical application and the desire to disclose more information in the published

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[18] W. A. Paton, Essentials of Accounting, (MacMillan Co., New York, 1949), p. 540.

reports.[19] Accordingly, the asset account itself shows the cost of the asset while the complementary account, the depreciation reserve or allowance, measures a "hole" in those assets subject to depreciation. The problem, then, becomes one of determining the method of computing depreciation.

The NARUC Committee on Depreciation described three general methods for computing depreciation. The first of these groups is the direct proportion group and includes such methods as the straight-line method and the production method. The second group is the interest group and includes the compound-interest method, the annuity method, and the sinking-fund method. The last group consists of the miscellaneous methods such as the sum-of-the years'-digits method, the declining balance method, and the per cent of revenues method.[20] In order to illustrate each of these groups and remain with a reasonable scope in this paper, only the more common methods of each group will be analyzed, although there are numerous methods and variations in use today.

The Straight-line Method

This method assumes that depreciable plant and equipment "expires" over a period of time, each period of time

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[19] Report of Committee on Depreciation, NARUC, 1943, p. 31.

[20] Ibid., pp. 60-61.

bearing a proportionate share of the cost. Regardless of use, some assets will depreciate only over time, this being especially true in consideration of the factor of obsolescence. To illustrate the mechanical application of this method, assume a plant which costs $100,000 to have a useful life of 20 years, after which time it disintegrates to dust. The straight-line method assumes that each year of the twenty should be charged with $5,000 of the cost, regardless of the production in each year. Of course, should there remain any salvage value at the end of the useful life, this will be considered in arriving at the annual charge. The major advantage of this method lies in its simplicity as compared to calculations under other methods.

The Production Method

This method is quite similar to the straight-line method in that it assumes that each unit of production of which the plant or equipment is capable, bears the same cost of depreciation, and as these units are produced such cost should be spread accordingly. For example, should a machine be capable of producing during its life a total of 1,000,000 kilowatt-hours, then each kilowatt-hour produced should bear a proportionate share of the machine cost. Since it is often difficult to ascertain production capabilities for some assets, such as an office building, this method has some limitations. The method is probably most popular during periods

of recession since full plant capacity is not usually utilized and, consequently, less depreciation charges will be made, increasing the possibility of showing earnings.

The Compound-interest Method

Under this method, the annual charge for depreciation expense is the amount which, if invested at a given rate of interest, will equal the total cost less salvage value at the end of the useful life, plus interest on the accumulated depreciation. The charge for the first year, therefore, is the annuity alone; however, each year after the charge includes interest so that the charges for depreciation grow in size each year. This method can be illustrated by assuming a plant which cost $100,000 to have a useful life of 10 years, after which time it will have a salvage value of $5,000. Further, the prevailing rate of interest is 4 per cent. The accumulation and annual depreciation charges are shown in the schedule on the following page:

SCHEDULE

Depreciation Charges Under the

Compound-Interest Method

Year	Annual Depreciation Charges	Accumulated Depreciation	Ratio to first Year Cost
1	$ 7,913	$ 7,913	1.00
2	8,229	16,142	1.04
3	8,558	24,700	$(1.04)^2$
4	8,901	33,601	$(1.04)^3$
5	9,257	42,858	$(1.04)^4$
6	9,627	52,485	$(1.04)^5$
7	10,012	62,497	$(1.04)^6$
8	10,412	72,909	$(1.04)^7$
9	10,829	83,738	$(1.04)^8$
10	11,262	95,000	$(1.04)^9$
Salvage Value		5,000	
Cost		$100,000	

The Sum-of-the-Years'-digits Method

This method has the reverse effect of the compound-interest method in that the depreciation charges are diminishing each year until the last. Under this method, the digits representing the number of years of useful life are added and depreciation charges are made according to the reverse order of years over the sum of the years' digits. For example, if useful life is estimated to be 5 years, then the sum of the digits 1 to 5 is 15, and the annual depreciation

[21] Ibid., p. 65.

charge would be 5/15, 4/15, etc., to the 5th year when the charge would be 1/15. This method has recently been approved by the Internal Revenue Service for income tax purposes and in many instances, such as depreciation on automobiles, represents a decline in economic value more accurately than the straight-line method and many others.

By far the most common method employed is the straight-line method. It is free from the calculations of interest and is quite practical in that it merely assumes that the price paid is the cost, disregarding any theoretical interest cost inherent within the purchase price paid. Further, this cost is measured in terms of service time or use. It is an acceptable theory for accounting purposes and especially for regulatory purposes, although it is recognized that other methods may have justification under some circumstances.

CHAPTER VII

SUMMARY AND CONCLUSIONS

This study has been an attempt to reconcile certain economic principles and concepts with the field of accounting. In attempting such a reconciliation, the factor of regulation for social and economic reasons intervenes, necessitating frequent referral to court and commission decisions. The accountant's role in respect to public utility accounting has been defined clearly by the various courts and regulatory commissions; however, there exists an apparently wide open area in which the accounting profession may operate to reconcile and accomplish the simultaneous goals of its profession, the economists, and the regulators.

Summary

Initially, the role of accounting for public utilities was introduced by a description of the peculiar needs of the public utility industry. Utilities, it was seen, are vertically integrated, producing and distributing its product which is service. The investment in plant and equipment is unusually large in proportion to the periodic revenues received and is, further, fixed because of its immobility, long life, and specialized nature. The fact that unit costs, because of the large fixed investment, vary with production necessitates certain accounting and economic considerations.

Because of the lower unit cost when production is the largest, government tends to grant monopolistic characteristics to utilities and consequently demands certain controls, again governing accounting considerations. Also, the desire for close and solid relations with the consumer public creates the demand for accounting records which charge the consumer for the services with consistent and reliable accuracy.

The brief analysis of the role of accounting in the public utility industry of necessity must be followed by a survey of the historical development of the industry. The rapid growth of public utilities, for the large part, began with certain inventions. Water and gas, being abundant throughout the annals of time, merely needed the concentration of people in geographical areas to get their start in public service. The telephone and electricity services had to wait for invention, but succeeded rapidly in becoming a completely integral part of community life. With these inventions came population growth which in turn necessitated larger and larger organizations which required larger amounts of capital, and thus the utility industry was born, to grow in quality and size into today's present organization.

With the special needs of utilities for accounting services and the growth and importance of the utility industry in mind, the study could then turn to the problem of determining how the industry should be rewarded for its venture. The consumer must be charged enough to make the venture

profitable but the consumer had to be protected from overcharges at the same time. Government, having granted the charters and franchises, felt its duty to afford this protection, both of the consumer and the utility. In order to accomplish this end, government attempted to establish rates for services by determining what the utility could receive in order to maintain operations which would result in the maximum public benefit.

In 1898, the Supreme Court first exposed the basis of determining this charge to consumers as the "fair value" of those properties used for public services. After determining the property value the next step was to find a rate of return based upon this valuation which would be generally acceptable, to the utility as being reasonable and to the public as being within reason. Once the amount was determined which would be needed by the utility, consumers could be charged a rate that would approximate in total this amount.

Certain problems arose in ascertaining the base on which the fair return could be computed. Cost was the first criteria to be used; however, because of the rapid growth of the industry through various financial means, cost was frequently obscured, or at least camouflaged to a great extent. This confusion brought about the theory of original cost, or historical cost, which allowed as a rate base only the cost of properties when first used for public service. This

theory, although to the benefit of the ultimate consumer, frequently placed a burden on the utility company. Many alternatives have been proposed through the years but none have lent themselves to the ease of computation and regulation as has the original or historical cost theory.

One of the alternative methods is the capitalization of income method. This method attempts to capitalize the market value of the utility's bonds and stocks to determine the fair rate of return. It has, however, never met with much acceptance and certainly cannot present as sound an argument as another popular alternative, replacement cost.

Replacement cost, or reproduction cost, has achieved high popularity as a theory and continues today as one of the more popular, if not with the regulatory bodies, at least with the public utilities. The main factor which has encouraged this popularity is the decline in the value of the dollar. The annual charges against income which were to represent a recovery of cost, began to appear insufficient when replacement was necessary in terms of the newer, less valuable dollars. The problem of employing replacement costs was one of determination and definition, as it is today. The regulatory commissions have fought this method partly because of the historical chaos and turmoil existent in its determination and regulation.

Although the courts and commissions have persisted in using original cost as a rate base, the rate of return itself

is the item which concerns the utility. Regardless of the rate base, a rate of return sufficient to provide adequate funds for operations, expansion, and investors' returns would be acceptable. Just what rate that would constitute a fair rate of return has been the problem in this area, however, and appear to be one which has not yet been resolved, judging by the enormous number of court cases and commission rulings.

The utility industry has found itself in an extremely grim situation with the rise in the price level of the past fifty years. This rise in the price level underlay the industry's plea for adoption of replacement cost as a rate base. When this failed they pleaded for an adjustment of the allowable fair rate of return based upon original cost. The regulatory bodies, in theory, agreed that the rate of return should be adjusted to maintain the industry's relative position as a business venture. However, the rate of return has been held rather sacred along with the historic original cost, and commissions have been fairly reluctant to raise the rate of return. The utilities have had to fight for every equalization increase in their rates to a competitive capital-procuring level. There have been an increasing number of supporters for some method of protecting the utility against an unfavorable position as a result of price level changes.

The manner in which price level adjustments might be

effected is beyond the scope of this study; however, the wide variance between original cost, on which the rate of return is presently based in the majority of states, and replacement cost indicates that the price level change is substantial. If commissions are so reluctant to admit this change, then the utilities must either seek relief through the courts or submit to government ownership, an alternative which can only lead to ultimate national decadence, if past performance in industrial and utility endeavors can be used as an indicator.

Finally, completely apart from the problems of rate bases, fair rates of return, and price level adjustments, some discussion of depreciation methods must be made. Depreciation, under any valuation basis and during any change in the price level, has long been an item of importance and actual existence. Methods of computing depreciation have varied and given rise to numerous arguments, although it is universally agreed that it must be recognized.

The methods employed have progressed from the haphazard, sporadic charges employed some fifty years ago to the more scientifically ascertained charges made today. Current methods, including the straight-line method, the production method, the compound-interest method, and the sum-of-the-years'-digits method, all are employed and fully recognized. Perhaps even today, however, there are certain depreciation policies which do not accurately reflect true depreciation. The fact remains that depreciation is recognized as a proper

cost of doing business and every effort is being made to record those costs as accurately as possible. The regulatory bodies have contributed heavily to standardizing the various methods, although of necessity, some leeway must be afforded to account for special situations and, particularly, changes in the obsolescence factor.

Conclusions

The basic conclusion which can be reached in examining many court and commission decisions is that the public utility is entitled to charge at least but no more than that amount which will provide a "fair rate of return" on the invested capital. Further, these charges for services should include, in establishing the fair rate of return, sufficient returns to attract additional capital investment for the improvements and expansion necessary for continued service to the public.

Although these avowed goals of rate setting are refulgent with reasonableness, the analysis of the rates of return actually allowed provide adequate evidence that these goals have not been reached and that the principles employed to attain these goals are totally and disappointingly insufficient. It is obvious that the returns to investors in many utilities have been grossly unfair; moreover, the additional capital requirements are not being filled, or at least are becoming increasingly difficult to fill for many

utilities. The prime example, of course, of unfairness to investors can be found in the transportation industry, particularly in the railroad industry. The electric power industry, as another example, would have found itself unable to proceed as rapidly in the development of atomic energy for commercial users without subsidization from government agencies such as the Atomic Energy Commission.

The determination of a fair rate of return has been made by regulatory commissions largely on the basis of accounting data in the absolute sense. With the systems of accounting established in the mid-1930s by the various federal commissions came the practice of ascertaining the rate base, on which the fair rate of return would be applied, by an examination of the utility's own books rather than by other methods previously employed, such as the appraisal procedure. This development necessitated a greater understanding of the accounting process by the regulatory bodies. Thus the role of accounting was accentuated and became of paramount importance; however, the rise in the importance and responsibility of accounting has overlooked the fact that there exist, presently, inherent limitations on the application of accounting data in the determination of rate bases.

The measurement of periodic earnings of businesses has long been accepted as being the primary function of accounting. It is not logical to assume, however, that true or adequate measurements of income producing resources are

thereby automatically determined by conventional, generally accepted accounting procedures. Further, there appears to be little reason to think that conventional accounting procedures could determine, in themselves, just what rate constitutes a "fair" rate of return. The fair rate of return, sufficient to attract additional capital necessary for expansion and continued service to growing demands, must, of necessity, be determined by consideration of additional factors such as the economic and financial situation, present and future.

Conventional, generally accepted accounting procedures determine income by matching revenues of a current dollar value with the costs, historical or current, of those assets consumed in the production process. The income figure thus computed reflects the increase in the equity of the owners as a result of transactions transpiring during the period considered. A comparison of this income with the owners' equity and net assets will determine the rate of return on the owners' interests and on the facilities and resources utilized in the production of income. When the price level is stable this comparison will yield significant results; but when the value of the dollar is fluctuating, as it has in the past forty years, such a comparison, when not adjusted or converted to a common denominator, has little, if any, practical significance.

There have always existed many arguments concerning the

proper computation of depreciation, but as long as the price level remains fairly stable any reasonable depreciation method will provide a relatively accurate measurement of expired cost. When the value of the dollar changes radically, as it has during the recent era, these reasonable depreciation methods provide a measurement of expired cost which has no significance at all when applied against current revenues to arrive at the income figure. Accounting data, based in part upon historical costs and accumulated over a long period of time, can no longer be utilized, without adjustment, conversion, or interpretation, for reaching sound conclusions, including, in particular, the decisions of regulatory commissions.

The accurate measurement of cost thus has become one of the major limitations of conventional accounting. While revenues are expressed in terms of current dollars, costs are expressed in terms of purchase-price dollars, regardless of the value of the dollar at the date of acquisition. The effect, obviously, is to overstate income. The public utility has especially been affected in that the larger portion of their capital must be expended in fixed plant and equipment before any revenues are produced and, further, will remain in use in the production of revenues for twenty years or longer. Professor Paton, in a recent testimony before the House Ways and Means committee, pointed out the inequities which result when conventional costing techniques

are applied. Public utilities should be allowed, according to Professor Paton, to compute the cost of plant and equipment "used up" in producing services in terms of current dollars - "the same kind of dollars business collects from its customers and reports as income, and the same kind of dollars paid for such current costs as wages, materials, and supplies."[1]

It should be emphasized that conversions of unlike dollars to a common denominator are not in conflict with existing accounting conventions. Such conversions are frequently made when comparing, for example, the U. S. dollar with the Canadian dollar. Further, there are relatively few fundamental features of conventional accounting which are considered erroneous even by the most ardent advocates of price level adjustments. There appears to be nothing inherently wrong with the primary purpose of accounting, that of matching costs and revenues to determine income. It is only the manner in which these costs are interpreted in the determination of periodic income that gross inadequacies are apparent.

Conventional accounting, in measuring income by deducting original dollar costs from current dollar revenues, is based upon the assumption that the monetary units are of

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[1] W. A. Paton, Testimony before the House Ways and Means Committee, The State Journal, Lansing, Michigan, February 2, 1958.

similar value and that the differences in value, if any, are relatively insignificant. Under such a theory as this one espoused by conventional accounting, original cost and replacement cost would be identical, or at least sufficiently similar to be considered identical. This basic accounting concept, oddly enough, supports the argument for price level adjustments since such conversion would be absolutely necessary in order to follow the matching of like dollars principle. It is evident, under any circumstances, that an accounting system based on cost must at least recognize the fact that unlike dollars currently are recorded in the accounts.

It is not necessary to record these price level adjustments in the accounts; however, as long as the regulatory commissions continue to base their decisions upon existing accounting data, these data should be presented so as to reflect accurate measurements of income. The weakness of accounting appears to reside in the fact that it lets it be assumed by the uninformed that the dollar results, as presented, are indicative of proper matching of true costs and revenues.

Unfortunately, the regulatory commissions, in large part, have refused to correct this inadequacy in setting the allowable rate of return, with the result that consumers of utility services are not being charged with the full cost of plant and equipment they are consuming. To require a utility

to recover one 1940 dollar of cost with one 1958 dollar of revenue is, it would seem, pure fantasy. A liberalization of commission policy in respect to valuation will prevent private-capital deterioration of the public utility industry and ultimate government ownership, an event which would be, to say the least, regressive and unfortunate.

END

APPENDIX

Court and Commission Decisions Affecting the Rate of Return in the Electric Utility Industry

Date	Rate	Regulatory Body	Case
2/5/36	6.5%	Dist. of Col.	Re Potomac Electric Power Co., 12 P.U.R. (NS) 174.
2/10/36	6.0	N. Dak. Dist. Ct., First Jud. Dist.	City of Grand Forks v. Red River Power Co., 12 P.U.R. (NS) 353.
1/20/36	8.0	Conn. P.U.C.	City of Farrington v. Farrington Electric Light Co., 13 P.U.R. (NS) 24.
1/31/36	7.0	Wash. Dept. of Pub. Service	Dept. of Pub. Serv. of Wash. v. Pacific Power and Light Co., 13 P.U.R. (NS) 187.
3/13/36	6.0	Wisc. P.S.C.	Re City of Oconto Falls, 14 P.U.R. (NS) 237.
9/18/35	5.25	Maine P.U.C.	P.U.C. of Maine v. Bangor Hydro-electric Co., 15 P.U.R. (NS) 49.
10/5/36	8.0	Mass D.P.U.	Mayor & Alderman of Lawrence v. Lawrence Gas & Electric Co., 15 P.U.R. (NS) 353.
6/30/36	6.0	N. Dak. Bd. of R. R. Comm.	Re No. States Power Co., 15 P.U.R. (NS) 126.
5/29/36	6.5	W. Va. P.S.C.	Re Flat Top Power Co., 15 P.U.R. (NS) 118.
3/31/36	6.0	N.Y. P.S.C.	Re Rochester Gas & Electric Corp., 12 P.U.R. (NS) 539.
8/25/36	6.0	Mich. P.U.C.	Re Houghton Co. Electric Light Co., 15 P.U.R. (NS) 546.

10/14/36	6.52%	Mo. P.S.C.	Cole v. Mo. Pub. Serv. Co., 15 P.U.R. (NS) 546.
10/23/36	6.5	Mo. P.S.C.	P.S.C. of Mo. v. Springfield Gas & Electric Co., 16 P.U.R. (NS) 267.
7/6/36	7.0	Calif. Supreme Ct.	So. California Edison Co., Ltd. v. R.R. Comm. of Calif., 17 P.U.R. (NS) 311.
3/25/37	6.0	Ariz. Corp. Comm.	Re Ariz. General Util. Co., 18 P.U.R. (NS) 315.
3/5/37	6.0	Ariz. Corp. Comm.	Re Ariz. Edison Co., 17 P.U.R. (NS) 543.
4/21/37	6.0	N.C. Util. Comm.	Citizens of Bryson City v. Smoky Mountain Power Co., 18 P.U.R. (NS) 344.
7/13/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Edison Light & Power Co., 19 P.U.R. (NS) 474.
10/20/37	6.5	Ariz. Corp. Comm.	Re Tucson Gas, Electric Light & Power Co., 20 P.U.R. (NS) 441.
8/17/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Duquesne Light Co., 20 P.U.R. (NS) 1.
10/5/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Solar Electric Co., 20 P.U.R. (NS) 398.
11/30/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Edison Light & Power Co., 21 P.U.R. (NS) 328.
4/28/38	6.0	Ind. P.S.C.	Re Indianapolis Power & Light Co., 23 P.U.R. (NS) 365.
5/9/38	6.0	N. Dak. Bd. of R. R. Comm.	Re New Era Constr. Co., 23 P.U.R. (NS) 462.
7/5/38	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Solar Electric Co., 24 P.U.R. (NS) 337.

10/14/36	6.52%	Mo. P.S.C.	Cole v. Mo. Pub. Serv. Co., 15 P.U.R. (NS) 546.
10/23/36	6.5	Mo. P.S.C.	P.S.C. of Mo. v. Springfield Gas & Electric Co., 16 P.U.R. (NS) 267.
7/6/36	7.0	Calif. Supreme Ct.	So. California Edison Co., Ltd. v. R.R. Comm. of Calif., 17 P.U.R. (NS) 311.
3/25/37	6.0	Ariz. Corp. Comm.	Re Ariz. General Util. Co., 18 P.U.R. (NS) 315.
3/5/37	6.0	Ariz. Corp. Comm.	Re Ariz. Edison Co., 17 P.U.R. (NS) 543.
4/21/37	6.0	N.C. Util. Comm.	Citizens of Bryson City v. Smoky Mountain Power Co., 18 P.U.R. (NS) 344.
7/13/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Edison Light & Power Co., 19 P.U.R. (NS) 474.
10/20/37	6.5	Ariz. Corp. Comm.	Re Tucson Gas, Electric Light & Power Co., 20 P.U.R. (NS) 441.
8/17/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Duquesne Light Co., 20 P.U.R. (NS) 1.
10/5/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Solar Electric Co., 20 P.U.R. (NS) 398.
11/30/37	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Edison Light & Power Co., 21 P.U.R. (NS) 328.
4/28/38	6.0	Ind. P.S.C.	Re Indianapolis Power & Light Co., 23 P.U.R. (NS) 365.
5/9/38	6.0	N. Dak. Bd. of R. R. Comm.	Re New Era Constr. Co., 23 P.U.R. (NS) 462.
7/5/38	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Solar Electric Co., 24 P.U.R. (NS) 337.

5/18/38	7.0%	Mont. P.S.C.	Re F. A. Horning, doing business as Superior Electric Light & Water Co., 24 P.U.R. (NS) 462.
8/4/38	6.0	N. Dak. Bd. of R. R. Comm.	Re Mont.-Dak. Util. Co., 24 P.U.R. (NS) 539.
7/15/38	7.0	U.S. Cir. Ct. of Appeals, 5th Dist.	Fla. Power & Light Co. v. City of Miami, 25 P.U.R. (NS) 321.
7/20/38	6.0	F.P.C., U. S.	Re Albany Lighting Co., 25 P.U.R. (NS) 36.
11/1/38	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Solar Electric Co., 26 P.U.R. (NS) 365.
4/17/39	6.0	U.S. Supreme Ct.	Denis J. Driscoll v. Edison Light & Power Co., 28 P.U.R. (NS) 65.
5/2/39	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Abington Electric Co., 28 P.U.R. (NS) 257.
8/10/39	6.5	Mo. P.S.C.	P.S.C. of Mo. v. Kansas City Power & Light Co., 30 P.U.R. (NS) 193.
8/8/39	6.0	N. Dak. Bd. of R. R. Comm.	Re N. Dak. Power & Light Co., 31 P.U.R. (NS) 26.
11/15/39	6.0	Pa. Supreme Ct.	Solar Electric Co. v. P.U.C. of Pa. et al., 31 P.U.R. (NS) 275.
11/17/39	6.0	F.P.C., U. S.	Re Interstate Power Co. et al., 32 P.U.R. (NS) 1.
1/25/40	6.0	F.P.C., U. S.	City of Los Angeles v. Nev.-Calif. Electric Corp., 32 P.U.R. (NS) 193.
6/11/40	6.0	F.P.C., U. S.	Re Safe Harbor Water Power Corp., 34 P.U.R. (NS) 236.
8/12/40	6.3	Wisc. P.S.C.	Re No. States Power Co. et al., 35 P.U.R. (NS) 241.

12/30/40	6.0%	N. Dak. P.S.C.	Re Central Light & Power Co., 37 P.U.R. (NS) 106.
1/31/41	6.5	Colo. P.U.C.	Norwood v. Montezuma Light & Power Co., 37 P.U.R. (NS) 541.
12/30/40	6.0	N. Dak. P.S.C.	Re Interstate Power Co., 37 P.U.R. (NS) 541.
7/16/41	5.5	F.P.C., U. S.	Re Chicago Dist. Electric Generating Corp., 39 P.U.R. (NS) 263.
7/30/41	6.0	Pa. P.U.C.	P.U.C. of Pa. v. Edison Light & Power Co., 40 P.U.R. (NS) 146.
10/30/42	6.0	Ky. P.S.C.	Re Ky.-Tenn. Light & Power Co., 46 P.U.R. (NS) 277.
2/16/43	6.5	U.S. Cir. Ct. of Appeals, 4th Dist.	Hope Natural Gas Co. v. F. P. C., 47 P.U.R. (NS) 129.
2/2/43	6.0	Wisc. P.S.C.	Re New Lisbon, 47 P.U.R. (NS) 537.
4/1/43	5.5	N.Y. P.S.C.	Re Orange & Rockland Electric Co., 49 P.U.R. (NS) 257.
7/17/43	5.0	Mich. P.S.C.	City of Detroit v. Detroit Edison Co., 50 P.U.R. (NS) 1.
9/11/43	6.0	Utah P.S.C.	P.S.C. of Utah v. Utah Power & Light Co., 50 P.U.R. (NS) 133.
3/6/44	6.0	N. Dak. Supreme Ct.	No. States Power Co. v. P.S.C. of N. Dak., 53 P.U.R. (NS) 143.
6/24/44	6.0	Ark. D.P.U.	Re Ark Power & Light Co., 55 P.U.R. (NS) 129.
3/7/44	6.0	Calif. R. R. Comm.	Re Vallejo Electric & Power Co., 55 P.U.R. (NS) 435.
7/22/44	5.5	Dist. of Col. P.U.C.	Re Potomac Electric Power P.U.R. (NS) 65.

8/4/43	6.5%	Pa. P.U.C.	P.U.C. of Pa. v. Mfrs. Light & Heat Co., 53 P.U.R. (NS) 540.
7/29/46	6.0	La. P.S.C.	P.S.C. of La. v. La. Power & Light Co., 56 P.U.R. (NS) 18.
10/10/44	6.0	Utah Supreme Ct.	Utah Power & Light Co. v. P.S.C. of Utah Comm., 56 P.U.R. (NS) 136.
1/3/45	6.0	Pa. P.U.C.	R. Pfeifle v. Pa. Power & Light Co., 57 P.U.R. (NS) 1.
5/22/45	5.12	Mich. P.S.C.	City of Detroit v. Detroit Edison Co., 59 P.U.R. (NS) 1.
3/27/45	5.5%	N. Y. P.S.C.	Re Staten Island Edison Corp., 60 P.U.R. (NS) 385.
2/11/46	5.0	Ga. P.S.C.	Re Savannah Electric & Power Co., 63 P.U.R. (NS) 59.
10/25/46	5.0	F.P.C., U. S.	Re Safe Harbor Water Power Corp., 66 P.U.R. (NS) 212.

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