Valuation of Public Utility Property

Two basic theories concerning valuation of public utility properties in today's marketplace

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The valuation of public utility property is a challenge to the appraiser for a number of reasons. The physical plant is special purpose property, sales are generally infrequent and not directly comparable, and the income of the utility is generally regulated by the utility commission. Many utility systems have only a small portion of the total property located within a particular tax district. Some public utilities are appraised for assessment purposes at the state level according to formulas that may have been substantially altered or warped by recent stock and bond prices; others are appraised and assessed at the local level.

This paper will explore basic valuation concepts appropriate for utilities in general and the electric utility industry in particular. Many of the appraisal procedures for electric generating power plants are equally appropriate to other public utility property.

There are two basic theories for the valuation of electric utility property: (1) the value is net original (book) cost (original cost less depreciation reserve); and (2) the value is greater than net book cost, frequently at or near reproduction or replacement cost less depreciation. The utility and its appraisers normally argue for the net book cost, and the taxing authority and its appraisers for the current or replacement approach. The net original cost view of value is frequently linked to the rate base adopted to test earnings by the state utility commission. The taxing agencies advocate a present value approach and claim not to be bound by the actions of another governmental agency. Further, economists point out that the value of the utility facilities are inherent in the property and that the economic value is not passed on to the property owners but to the customers in the form of lower rates. More on these theories later. The positions of the two sides and the application of valuation principles can best be examined with a brief discussion of public utility companies as a regulated enterprise.

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Public Utilities

A public utility is a regulated business providing an essential public service. In return for a franchise to serve a specific geographic service area, the utility agrees to be regulated by the utility commission as a proxy for the lack of direct competition within the service area. Typical public utilities include electric, natural gas, telephone, water, and, to some extent, cable television. Many public utilities are investor owned and subject to regulation. Others, such as municipal or government owned utilities or cooperatives are usually not subject to regulation by an outside agency.

Regulation by a utility commission takes place in a variety of ways. The service area is specified, standard accounting procedures must be followed, prices for services cannot be revised without approval, and construction of major new facilities and issuance of new securities must be approved. The income of the utility in a rate case is based on estimates of sales, revenues, and expenses. Rate schedules are approved that provide the utility the opportunity, but not a guarantee, to earn an allowed income.

Public utilities are not isolated from competition even with the provisions of the franchise. Certain electric services are subject to competition from competitive fuels or energy sources such as natural gas. The telephone industry is highly competitive because of new technology and the breaking up of a monopoly. Even water utilities have competition from wells or water sources developed by large customers.

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The utility commission determines the amount of earnings required to service the interest on debt and to provide a reasonable return on the common equity of the utility. This earnings total is frequently related to or expressed as a percentage of the rate base. The rate base normally consists of the original cost of the utility plant, less accrued book depreciation, plus allowances for materials and supplies, cash and working capital, and construction work in progress (less certain tax credits). The rate base may be for a past year, the current year, or a "forward" test year.

Many utilities claim the rate commission "values" the property in adopting the rate base. Not true. The utility commission does not value the utility in the normal sense of the word nor does it establish the rate base and then automatically grant a certain rate of return. The total amount of return is determined by the commission. It is then expressed as a return on rate base for comparison with other utilities or compliance with a statutory rate base.

Most utility commissions that formerly considered "fair value" in the rate base have abandoned such procedures in the last few decades. With the change from fair value to a net cost, the amount of earnings has not changed one dollar. The rate of return on a fair value base has changed from 6% on fair value to 9% on net book cost. (The most striking example occurred in the state of Ohio where the rate base was defined as reproduction cost less depreciation. Reaction to rising utility rates led to a change in the law to a mandated net book cost rate base. The utility rates and earnings did not change a bit, and electric rates continued as they were). It is clear that the utility commission does not make a valuation of the utility in a rate case.

Economists Levin and Smith (n.d.) have pointed out that the utility commissions maintain utility rates at less than current economic costs and pass on the benefits to consumers in the form of low utility rates. Thus, electric rates are based on costs related to the historical cost of an electric power plant averaging $200 per kilowatt of capacity, rather than the current replacement cost of $800 per kilowatt of capacity. The beneficiaries of the economic value are the customers of the utility from rates established using the $200 historical cost. The fact that customers receive the economic benefit is confirmed in utility commission decisions allowing the premium price paid by a regulated utility to be included in rates to customers (through an amortization process) where the price and transaction is shown to benefit the customers. A property tax based on true economic value (at $800 in the example in Table 1) would obviously result in higher electric rates for the consumers of the utility. Incremental property tax based on current value is more than offset by the low electric rates enjoyed by the same consumers because of the historical pricing of electricity.

In general, where a utility shows the transaction and price to be beneficial to customers, commissions provide for partial or full amortization of cost above the line.

It does not follow that two power plants in a utility have precisely the same value just because they have the same net book cost. Consider two plants, one an older, somewhat inefficient coal-fired electric generating plant and the other a hydroelectric plant, relatively modern and automated. Each plant has a net book cost of $50 million. Any rational appraisal would result in a much higher value for the hydroelectric plant than for the coal-fired plant. The hydroelectric plant would command a higher sale price.

A few words about public utility accounting and rate making procedures: Property taxes, along with labor, fuel, postage and other expenses, are a "pass through" by the utility to the consumer. The utility neither profits nor loses from such expenses but is reimbursed. There could be a short-term reduction of earnings if some item of expense increases, such as property taxes, and utility rates are not adjusted until 6 or 12 months later. This situation, generally short-term, has been somewhat severe during recent inflationary times but has recently abated.

Public utilities are required to follow standard accounting procedures. Among other things, these procedures require that the original cost of any utility property purchased be transferred to its accounting books and records at the same original cost (no write-up of value is recorded in the plant account of the utility). Where a premium is paid above net book cost for an operating utility system (such as a purchase of an electric distribution system from a municipality by an investor owned utility) any premium paid is recorded as an acquisition adjustment.

Some appraisers have claimed that the commission would "not let them" pay more than net book cost for operating property. Again, not true (Iowa State Commerce Commission 1983; FERC 1985; Wisconsin Public Service Commission 1979). The utility commission instructs the utility on how to account for the acquisition investment. The premium may be charged off or amortized over a period of time "above the line" to utility rate payers, "below the line" to shareholders, or a combination of the two. In general, where a utility can show that the transaction and price paid will be beneficial to its customers (both within the area served by the acquired property and throughout the utility), most commissions provide for a partial or full amortization of the cost above the line. Thus the cost is eventually paid for by the customers who benefit from the transaction.

Valuation Concepts

Three standard valuation concepts in determining fair market value are considered in a public utility valuation. Sales of electric power plants, particularly hydroelectric plants, are uncommon but do take place occasionally. Sales of electric transmission and distribution property also take place from time to time, and some insight into the value indicators (relation of sale price

Table 1. Example of an Unsound Approach to "Economic" Depreciation on Appraisal Results ($1,000)

Description	(1) Actual Replacement Cost in Dollars		(2) Replacement Cost × 10 in Dollars		(3) Replacement Cost ÷ 10 in Dollars	
1 Replacement cost new	3,000		30,000		300	
2 Less depreciation	(900)		(9,000)		(90)	
3 Net RCNLD (1) − (2)		2,100		21,000		210
4 Return at 10% on RCLND (3) × 10%	210		2,100		21	
5 Allowable return on original cost less depreciation (9) × 10%	(80)		(80)		(80)	
6 Return difference, RCLND vs. actual (4) − (5)	130		2,020		(59)	
7 Economic obsolescence–return diff. @ 10% (6) ÷ 10%		(1,300)		(20,200)		590
8 Net value after depreciation and economic obsolescence (3) − (7)		800		800		800
9 Original cost	1,000		1,000		1,000	
10 Book depreciation	200		200		200	
11 Original cost less depreciation (9) − (10)		800		800		800

to net book cost or reproduction cost less depreciation) can be gained from such transactions. The current costs of building electric generating plants is a useful value indicator since it indicates what utilities are willing to pay for new generating capacity in the current market and environment. (Most owners of older generating plants with lower capital costs are unwilling to sell them because they would have to replace capacity at current costs).

When considering prospective buyers for a utility property, one would need to consider not only investor owned or regulated utilities but also nonregulated buyers. In many states, a municipal or governmental electric utility organization is not subject to regulation as are investor owned utilities. The prospective buyer could be one or a group of industrial companies that might use the power for their own purpose and therefore not be considered a public utility. Public agencies, of course, are not subject to federal income tax and can frequently finance at lower cost through tax exempt bonds.

Capitalized income in the traditional sense is not available for use for a number of reasons. First, the income associated with an individual asset within a utility system cannot be determined except by an allocation process or by assumptions. Some assume that income is proportionate to net book cost and apply rate of return to the net book investment for such purposes. Capitalizing this return then leads in a circular fashion back to the net book cost. The income of individual assets for a utility property is not known. The value of the output can be estimated, however, on the basis of current market prices for kilowatt hours of energy and kilowatts of capacity provided by the generating station. The value of the power plant output can be measured on the basis of the cost of generating electricity at a newly constructed plant or by reference to power pool contracts or purchase contracts. This independent measurement of the value of the output may be a useful tool in the appraisal process.

Reproduction cost and replacement cost less depreciation can be fairly readily determined for an electric generating plant. Historical cost can be adjusted to current price levels by means of standard indexes developed for such purposes (Handy-Whitman Indexes). Most utilities are required to maintain detailed cost records and can provide the original cost by year of installation for the subject plant. Replacement costs can be determined on the basis of engineering estimates or by reference to costs of recently completed plants. Although there are individual differences due to site, conditions, and other factors, there is a substantial amount of similarity in electric generating plant construction. More important, the kilowatt hours of energy and kilowatts of capacity are well-defined and highly uniform outputs.

An important part of the cost appraisal is the depreciation determination. Electric generating plants are facilities designed to be in service for long periods of time. In recent years, generating plants using fossil fuels, particularly coal, have been rehabilitated to extend the service life as a more economical procedure than building new capacity at much higher costs. Inquiries should be made of utilities as to any plans for retiring or extending service lives (at present a fairly common procedure to delay building new, higher cost plants). The present value of the future service life and output of the plant is important, particularly for older facilities. Fossil fueled power plants normally are used for a base load or a primary source of supply during the first decade or so after construction. The next phase of a typical life cycle is for the plant to be used intermittently or cyclically. In the last phase they are on standby or reserved status for use during periods of peak demand or in emergencies.

The situation for hydroelectric plants is different. The principal cost for a hydroelectric plant is the capital cost. Once incurred, such plants are virtually immune from inflation (no fuel costs). Most plants are automated for remote operation. Periodic inspection and maintenance is required during the life cycle of the plant (which may be 100 years). Major rebuilding or replacement of mechanical components may be required. The energy crisis of a decade ago has stimulated activity not only in extending the life of hydroelectric plants but in developing new sources and rebuilding existing plants to make better use of their capacity.

The study of actual depreciation existing at the appraisal date should include consideration of all forms of depreciation—physical wear and tear and obsolescence. Obsolescence can be caused by basic economics (the plant is relatively more expensive to operate than other sources, or the town served by the distribution system is declining because the mine is exhausted), or the plant may have higher labor and maintenance costs compared with a modern plant. The cost of power from a modern, more efficient plant can be used as a guide to the obsolescence in the subject plant. Public authorities may impose operating restrictions and add to the cost of operating a plant. These cost penalties can be evaluated and capitalized as a part of the determination of the overall depreciation deduction from the reproduction or replacement cost.

The net result of the valuation study is normally a series of value indicators using the cost method and the income method with general support from the analysis of sales data.

Sales of Public Utility Property

A compilation has been made of sales of public utility property. The list is not exhaustive but is representative. The majority of sales of primarily electric distribution systems during the past 10 or 12 years have taken place at an amount greater than net book cost and frequently at reproduction cost less depreciation. Frequently, when net book cost was the basis for transactions, they were "sales of convenience" (for example, one utility exchanges an ownership of a transmission line with another in order to equalize the investment and maintenance responsibilites). Accounting treatment by regulatory commissions (assuming the new owner was a regulated utility) with respect to the premium paid above net book cost has been mixed. If the transaction was justified as beneficial to the customers, the commissions generally allowed the premium to be recovered through rates. Shares in power plants have also been sold, usually in power plants under construction or recently completed, although in a few cases, existing capacity became available and was sold to benefit both of the utilities involved. In one recent sale in Iowa, for example, a portion of a power plant was above the historical cost depreciated but less than replacement cost, which the Iowa Commission deemed to be beneficial to both parties in the sale.

The Net Book Cost Theory and "Economic Obsolescence"

It has been argued in some contested property tax cases that the value of the plant is net book cost or less (less because of below normal earnings of the total utility), and that any consideration of reproduction or replacement cost less depreciation should be tempered by "economic obsolescence." The definition of economic obsolescence frequently applied by some appraisers always lowers the value to net book cost. The procedure is circular and always (except for other factors considered, such as the actual earnings being less than the allowed rate of earnings) leads back to the net book cost value. The economic depreciation factor developed in such presentations is calculated on the basis of the difference between the allowable earnings of a new book cost rate base and the theoretical earnings based on a replacement cost rate base. The difference is capitalized, and the result is always the net book cost. An example of such approaches to economic depreciation, which are totally unsound, is shown in Table 1. Column 1 of the table shows a typical presentation. Columns 2 and 3 illustrate that regardless of the starting RCNLD total on line 1, the final result is always net book cost ($800 in this example). It is apparent that whatever the beginning number, whether it is the replacement cost less depreciation, a number ten times higher or lower than the national debt, or the Dow Jones Average, the answer is always net book cost (if the starting number is less than net book cost, there would then be a positive economic depreciation to be added to the starting figure to bring the value up to net book cost—a concept somewhat hard to grasp). The depreciation analysis should include a careful evaluation of all pertinent factors, physical and functional. Presentations similar to those in Table 1 do not provide useful guidelines to the determination of actual depreciation.

Court Decisions

In recent years there have been several court decisions on this matter, and others are pending. Notable are the decisions in Michigan (Consumers Power 1978), New York (Brooklyn Union Gas 1985), and Massachusetts (Boston Edison 1986). There are cases currently pending in other states that may shed more light on this subject. The decisions in the three states listed above found that net original cost is *not* the value for property tax purposes. The values found were substantially above net book cost, and in two decisions (Michigan and New York) the courts held that reproduction cost new less depreciation is the standard for tax valuation. Admittedly, the tax practices vary from state to state, but the basic valuation principles would appear to be fundamental to the problem and cut across state lines.

Summary

It is clear that when public utility property is sold it sells at a price greater than net book cost. The advocates of net book cost as a valuation standard for public utility property rely too heavily on what they perceive to be traditional regulatory procedures and do not consider the realities of the marketplace, as evidenced in numerous

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sales of public utility property. Although it is true that sales of an electric system are not precisely comparable to a system being appraised, the general principles and guidelines should be no different if the subject property were to be sold. Attempts to justify net book cost as a valuation base using a so-called economic depreciation procedure are not supported in the conventional valuation literature, nor have they stood the test of close analysis.

Strong reliance on the regulatory aspects of public utilities ignores the fact that a prospective buyer could be a municipal or governmental organization or one or more industrial or large electric user(s).

For electric generating plants, the current cost of construction is frequently three or four times the historical cost of a plant being appraised. Appropriate deductions for depreciation and functional obsolescence normally still result in a value indicator substantially higher than the original cost less accumulated depreciation. Supporting studies using the cost of generating power at newly constructed facilities, as well as the general relationship between replacement cost less depreciation and book cost for utility sales, lend support to giving strong weight to the replacement cost less depreciation method. IRWA

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End Notes

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