

DEPRECIATION PROBLEMS

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Depreciation Problems by Halford Erickson

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HALFORD ERICKSON

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By HALFORD ERICKSON

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This paper deals mostly with the financing and the accountancy of depreciation and with certain questions that are involved in distinguishing between depreciation and ordinary repairs. Such phases of depreciation as its nature, the necessity of providing for it, the method of determining the life of the property have been touched upon but not discussed at length.

Of all the subjects that have been brought to light and discussed, especially in connection with the regulation of public utilities, none has presented a more fruitful field for differences of opinion than is the case for depreciation. The discussions that have been carried on upon this subject and the facts that have been brought out concerning it, however, have led to a fairly general settlement of some of its fundamental features. For instance, depreciation is now quite generally said to represent that loss of value and efficiency in property and equipment which is due to wear and tear, to age or general decay, and to inadequacy and obsolescence. It is also generally acknowledged that these losses are proper charges to the operating expenses and should be covered by the earnings and that they should be considered in connection with the valuation of the property.

In providing for depreciation the general practice is to cover that part of it which is represented by wear and tear by direct charges to the repair accounts. While such depreciation as is due to age or general decay, inadequacy and obsolescence is sometimes provided for in advance by reservations from earnings, and at other times again by charging the cost of renewing or replacing discarded units of property directly to the operating expenses.

There is still considerable dispute as to how depreciation should be measured or determined. Some depend on life tables of such property as that involved; others again upon their own judgment in the matter, based on the inspection of the property and the operating and other local conditions. While these methods will not be discussed at length here, it may be said that both are important. Life tables, properly kept, classified and used, throw a great deal of light upon the question. This may also be said of personal inspections of the property and the conditions by which its life is affected. Especially is this true when the inspections are made by competent parties. The best and most satisfactory way, however, is to use both methods. The use of life tables should be supplemented by actual inspection and vice versa. In addition to this, liberal use should also be made of all other facts that have any bearing upon the question. In this way it is usually possible to determine with a fair degree of accuracy the probable life of each class of property. That the life of the property should be determined as accurately as possible, is also of the greatest importance, for upon it are fixed the amounts that are allowed for depreciation.

The rate of depreciation thus depends upon the life of the property and is therefore higher for property with a short life than for property with a longer service life. The life of the property depends upon its nature, the character of the use that is made of it, whether it is kept up by ordinary repairs, and many other conditions. Repairs not only prolong the life of property but they maintain its efficiency for operating purposes. Charges for depreciation, when based on the life of property kept up by such repairs, are therefore not likely to be large enough to cover the cost of depreciation when repairs are included therein. Under this method of financing depreciation, therefore, it is necessary to make separate provisions with which to meet the cost of necessary repairs.

The fact that depreciation as well as ordinary repairs are proper charges to the operating expenses has not always been generally recognized. Not infrequently have renewals of all kinds been charged to the construction accounts and paid for by the proceeds from the sales of additional security issues. The fallacies involved in this, however, which become apparent when such practices are viewed in the light of settled economic theories, are gradually becoming more generally recognized. Only

in exceptional cases, such as the destruction of property due to unforeseen and undeserved calamities or causes, and under highly abnormal conditions in certain other respects might it be justifiable to temporarily charge renewals or replacements to capital.

While depreciation is constantly going on, the outlays for renewals are irregular and often relatively large. These outlays are in fact of such nature that for most plants they cannot be evenly distributed from year to year. In order to prevent serious fluctuations in the operating expenses and in the net earnings it is therefore best to provide for depreciation in advance through regular annual charges against earnings, which charges are adjusted as closely as possible to the rate at which depreciation is accrued. Larger plants, such as railways, are often in position to so adjust their renewals that the cost of the same remain fairly constant from year to year. In such cases it may not be necessary to provide for depreciation in advance, since the cost of the renewals can then be charged directly to the operating expenses. Under this practice, however, there is often a great deal of accrued depreciation that is not offset by assets in some form. Without reserves of some sort, the investment cannot be kept intact.

Several methods are proposed for financing the accrued depreciation. The most important of these, and the ones which seem to be best adapted to public service properties operating under regulation, are the straight line and the sinking fund methods. These have been explained and their use illustrated.

It will thus be assumed in this discussion that depreciation is to be set aside on either the "straight line" or "sinking fund" basis. According to the straight line method the annual allowance for depreciation is arrived at by dividing the cost new less scrap value of the depreciable property of each group by the estimated life of that group. The sum total of the allowances for all groups will give the total annual amount necessary. The rate of depreciation, according to this method, is therefore obtained by dividing this total annual allowance necessary to cover the depreciable property for the plant as a whole by the cost new less scrap value of all the depreciable property of the plant. Under the sinking fund method it is assumed that the amounts allowed for depreciation are invested at compound interest at a given rate, and that this interest also goes to make up the annual provision for depreciation. Since, in this case, the element

of interest as well as the principal becomes part of the annual provision for depreciation, it necessarily follows that the annual charges to operating expenses need not be as large as would be the case if no interest allowances were included. The annual allowance necessary for each group of property is derived by multiplying the cost new less scrap of each group by a rate per cent gotten from sinking fund tables. The sum total of the allowances for all groups will give the total annual amount necessary exclusive of interest. By dividing the total annual allowance by the cost new less scrap of all the depreciable property the rate per cent will be obtained.

The procedure under either method is approximately the same. Only from an accounting viewpoint is there any distinction worth noting: under the straight line method the annual allowance for depreciation is obtained from only one source, or from charges to the operating expenses alone; under the sinking fund method the annual allowance is obtained from two sources, or partly from charges to the operating expenses and partly from the interest received for the use of depreciation balances.

Arguments to the effect that under the sinking fund method, in order that interest may be had for the use of the balances for depreciation, it is necessary to segregate the amounts set aside for depreciation into a reserve fund, do not seem to be supported by the facts. For instance, there does not seem to be any good reasons why assets offsetting the depreciation reserve can not be as effectively employed for interest earning purposes as balances in the depreciation reserve fund. All that is necessary to that end in either case is that such assets and balances are in such form as to be available for use, and that opportunities are offered for their profitable employment. The confusion upon this point is probably due to failure to note the differences that exist between the sinking fund method of providing for depreciation and sinking fund requirements for the retirement of bonds.

It is an open question from a business point of view whether it is advisable to establish a depreciation reserve fund at all. In order to establish such a fund it is necessary to transfer to it the cash or other assets that are held against the depreciation reserve. Further, in order that interest may be earned on the assets so transferred it is necessary that the balance in the fund be placed at interest or temporarily invested in such a way that it will be readily available when needed for renewals. As the

depreciation assets or balances can be as well, if not better, used or invested while standing as offsets to the depreciation reserve as after they have been transferred into the reserve fund, the creation of a reserve fund will only place a few additional restrictions upon the use of these balances. It will probably result in this: that the amounts set aside for depreciation will in part find their way into the reserve fund and in part be held as offsets to the reserve account. Whether the provisions for depreciation are placed in the reserve fund or merely treated as offsets to the reserve account would not seem to be of vital importance. This is at any rate the case when the affairs of the plant are properly managed.

The amounts thus set aside for depreciation, however, while held awaiting the use for renewals, should be advantageously employed. For such employment the opportunities are often numerous, but none would seem to be more advantageous and economical from a business point of view than those which are offered by such extensions to the plant as are needed from time to time, often annually. Such employment of the reserve assets enables extensions to be made even under adverse financial conditions when capital might not be obtainable in any other way. It is also as a rule fairly well secured against extraordinary risks, and besides is likely to bring better returns than could be obtained elsewhere. It must be understood, however, that such use of these assets in the plant should not be considered permanent investment, but rather in the nature of a loan, and that whenever needed for renewals the loans so made must be returned to the reserve or fund. The use of assets offsetting the reserve for plant extensions therefore merely *postpones* the time when additional capital securities must be issued for the cost of these extensions. Security issues for such purposes and under such conditions are in fact capital issues, and should be so regarded. As such loans thus tend to defer, sometimes for years, the issuing of capital securities for new extensions, they also defer the interests payment thereon and hence often result in considerable savings to the plant from this source.

It would even seem that for a permanent plant, owing to the fact that its cost new less depreciation will always remain much less than its cost new, a part of the amount set aside to keep the investment intact might be permanently withdrawn and returned to the investors. Such return of a part of the invest-

ment, however, would amount to about the same thing as the withdrawal of an equal proportion of the capital invested, and would therefore reduce the basis upon which the returns for interest and profits should be allowed. It would also alter the basis upon which the depreciation allowances are computed, especially under the sinking fund method. While such withdrawal of a part of the capital might be practical, it is so closely connected with other conditions that it is doubtful whether in the end it would be in line with the best policy.

The assets offsetting the depreciation reserve may also at times be profitably used as additional working capital and for other more or less temporary purposes in the operation of the plant. When such assets are in such form as to permit it, there are also times when for most plants it is not only more convenient, but less costly to borrow for current use from these assets than from the banks. Instances in point might easily be mentioned were this thought necessary.

It is of course necessary for utility managers to use discretion in determining how much of the depreciation reserve should be represented by plant, and how much by other assets of various kinds. Care should be taken that the policy adopted in this respect is not one that will injure the service. The amounts for depreciation are contributed by the consumers through the rates they pay for the service, and the consumers as such are entitled first of all to reasonably adequate service. Any use of the moneys for purposes through which the service is impaired is in direct violation of the principles which justify an allowance for depreciation, and should be avoided. Whether the amounts set aside for depreciation should be placed in a reserve fund or merely kept as offsets to the reserve account would seem to be questions that largely depend upon the character of the management and the circumstances under which the plant is operating. For some plants the former course may be the best; for other plants, again, the latter. There are also likely to be plants whose interests are best protected when a part of these assets are placed in the reserve fund and a part employed for current purposes.

Since under the sinking fund method of providing for depreciation it is necessary that the balance held for such depreciation until needed for renewals be so used or invested as to bring in something in the way of interest, the question arises as to the

basis upon which such interest should be figured. In thus determining upon how interest is to be figured there is much to be taken into consideration. In the first place, it cannot often be safely assumed that the entire balance can always be so used as to earn interest. If any part of it remains idle from time to time, as it is almost certain to do at least for shorter periods, the interest is reduced by that much. Then again, the question of the safety of the loan or investment must be taken into account. Balances of this kind should not be placed in risky undertakings, even if this means lower returns for interest. Small risks and low rates of interest usually go together. The rates of interest paid on deposits by banks and trust companies do not exceed 3 or 4 per cent, depending upon the time involved. First class bonds and mortgages readily convertible into cash yield but little more than this. Depreciation balances, because of the circumstances involved, are likely to yield even lower rates than those given. In view of these and other facts it is not safe to assume that such balances will regularly bring more than from 2 to 4 per cent on their entire amount.

The interest thus received from the balances held for depreciation should be as carefully accounted for as any other part of the business. In the income account, for instance, such interest accretions may be shown both as non-operating revenues and as deductions from gross income. When presented in this form they can be fully taken into the accounts without affecting the net earnings from operation alone.

Since depreciation is an operating expense, it should also be charged to operating expenses, and such charges to these expenses should be made in monthly or other periodical allowances. When regularly charged up in this way there is also likely to be a fairly close agreement between the sum of these charges and the amount of the depreciation that has taken place in the property.

That depreciation in a broad sense includes repairs is also evidenced by the fact that it is the purpose of depreciation to keep the cost of the property intact. For it is obvious that the integrity of the investment can not be maintained through depreciation allowances alone unless these allowances are also large enough to cover such losses as those which are made up by repairs. While it is suggested herein that depreciation and repairs should be kept apart, these suggestions do not mean that it