

Depreciation Expense Versus Renewal and Replacement: Differences Between Accounting Depreciation and Actual Cash Flow Needs

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In today's dynamic and challenging public utility environment, there is an ongoing dilemma between the accounting methodologies of financial reporting and the reality of cash flow needs. At the center of the controversy is the question of fully-funding booked depreciation expense versus sufficiently funding reinvestments in existing infrastructure via renewal and replacement (R&R) expenditures. By definition, depreciation expense is calculated as the allocation of the cost of an asset over the period in which the asset is *expected* to be used. Such expense is commonly recognized by businesses for financial reporting and tax purposes. However, since governmental utility systems are tax-exempt entities, depreciation expense is only used for purposes of financial reporting. The question becomes one of whether the financial reporting of depreciation is useful for purposes of financial planning and utility rate setting.

In the world of accounting, depreciation expense does not require an actual outlay of cash. This is why depreciation is commonly referred to as a "non-cash" expense. However, in the world of utility management and planning, the cost of acquiring depreciable assets actually does require a real outlay of cash. As such, while depreciation expense does not affect the statement of cash flows, the cost of acquiring assets has a direct and real impact on cash flows. In accounting theory, an asset with an *expected* useful life of 20 years will be depreciated for that term and then replaced with a new asset at the end of the term. In reality, by funding and utilizing R&R reserves, ongoing refurbishments can be made to the asset that will extend the *actual* life of the asset. As such, the actual R&R expenditure made is significantly less than the calculated depreciation expense. For purposes of utility budgeting and, more importantly, rate setting, the actual cash expenditure is far more relevant than the theoretical accounting depreciation expense.

Although depreciation of assets is certainly not something to be ignored, and does have its place in prudent utility management, the amount to which depreciation is funded with actual cash should be a capital planning decision, not an accounting decision. The following will address the theoretical and real dif-

ferences between the accounting depreciation reported in audited financial statements and the actual infrastructure depreciation impacting the financial integrity of a governmental utility system. The intent is to provide utility managers with a better understanding of the differences between accounting depreciation and capital R&R, and ultimately, how the funding decisions can impact utility rates.

Financial Reporting

Financial reporting for revenue-generating organizations in the United States is typically conducted in accordance with Generally Accepted Accounting Principles (GAAP). In general, GAAP refers to a common set of accounting principles, standards, and procedures that entities use to compile their financial statements. The financial guidelines of GAAP provide a combination of authoritative standards used to establish the commonly accepted ways of recording and reporting accounting information. The primary purpose of GAAP is to develop consistency in the reporting of companies and businesses so that financial analysts, banks, shareholders, and the Securities Exchange Commission (SEC) can have all reporting entities preparing their financial statements using the same rules and procedures.

When developing financial reports such as balance sheets and income statements, one of the primary items addressed is depreciation and the associated annual depreciation expense. Depreciation represents the decline in an asset's economic and physical value because of the asset's use. According to GAAP, depreciation is an expense that must be periodically reflected on the books and recorded to allocate an asset's economic benefit over its useful life.

As described above, the GAAP standards are intended to apply to companies and businesses. Such entities are for-profit organizations that operate in a competitive marketplace and receive revenues from a voluntary exchange between a willing buyer and seller. Businesses exist for the purpose of maximizing value for their shareholders. Additionally, profit-seeking businesses are subject to income

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taxes. One of the primary offsetting items that can be applied to minimize the tax implications, and thereby maximize value, is the depreciation expense. As such, for a business, it is appropriate and even profitable to follow GAAP for financial reporting purposes.

These general business components also apply to private, investor-owned water systems, with the exception of the competitive marketplace and voluntary exchange of revenues. Investor-owned water systems are typically awarded a defined service territory by an overseeing regulatory agency. In return, the regulatory agency maintains the authority to review and manage rate setting practices. For the regulated investor-owned utility, a relatively rigid and prescriptive method must typically be followed in using depreciation to reduce its tax liability, as well as for requesting increases. Of course, the financial reporting requirements for investor-owned utility systems are typically consistent with GAAP.

Conversely, government-owned and -operated water utility systems are fundamentally different than for-profit businesses, including investor-owned utility systems. The governmental systems are non-profit operations that exist for the purpose of providing high-quality utility service to its customers. As a government entity, such utility systems are not subject to income taxes and therefore have no concern about reducing tax liability through utilizing depreciation expense. As compared to investor-owned systems, government-owned utility systems have different purposes, stakeholders, budgetary obligations, and accountability. For financial reporting purposes, governmental utility systems need to provide information to meet the needs

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of stakeholders (e.g., customers and bond holders) for purposes of assessing government's ability to make beneficial political, social, and economic decisions. These other factors are applied in conjunction with financial considerations for purposes of setting utility rates.

General Rate Setting Principles

As previously addressed, depreciation of assets and the applicable expenses related to such depreciation should not be ignored and has its place in prudent utility management. However, for purposes of setting utility rates, generating an amount of revenue that will completely fund the annual depreciation expense provided in the audited financial report is not typically practicable, and can even result in a material over-recovery of revenues from the rate payers, better known as the customers.

There are four substantive and industry-recognized publications that provide guidance in the area of setting rates for water systems, each published by the American Water Works Association (AWWA):

1. AWWA Manual of Practice M-1, *Principles of Water Rates, Fees, and Charges*, 2000 edition
2. AWWA Manual of Practice M-5, *Water Utility Management*, 2005 edition
3. AWWA Manual of Practice M-29, *Fundamentals of Water Utility Capital Financing*, 2008 edition
4. AWWA Manual of Practice M-54, *Developing Rates for Small Systems*, 2004 edition

The information contained in these manuals is recognized for its importance by both federal and state regulatory authorities, including the United States Environmental Protection Agency (USEPA) and public service commissions (PSCs) nationwide. Based on the information provided in the manuals, there are two primary ratemaking methodologies employed by public water utility systems: 1) the cash-needs basis, and 2) the utility basis. Both methodologies have been tested in the courts, and have been established as valid applications for setting rates. The selected method often depends upon the nature of the customer base served by the system. For example, for systems with primarily retail service-oriented use (e.g., mostly residential with some common commercial customers), the cash-needs basis is often applied. Conversely, for systems with large wholesale and/or significant industrial service obligations, the utility basis may be preferable.

Real Cash Flow Requirements

Regardless of the rate methodology applied, the primary objective when setting utility

rates is cost recovery. For purposes of developing a utility operating budget and applicable rates, cost recovery means generating sufficient revenues to meet all annual expenditures for the utility system. The annual expenditures refer to actual cash payments (or transfers) and do not include non-cash items such as the depreciation expense reported in the audited financial statements. In fact, AWWA Manuals of Practice M-1 and M-29 state depreciation is not typically considered in the process of setting rates. When developing annual budgets and rates, utility management must recognize such cash flow requirements as:

- Operation and maintenance expenses (O&M)
- Debt service (principal and interest)
- Capital expenditures (general capitaloutlay, capital improvements program, etc.)
- Renewal and replacement (R&R)

Operation and Maintenance Expenses

The O&M expenses are primarily those ongoing costs for labor, materials, supplies, and services required to manage and operate the utility system on a day-to-day basis, while maintaining a dependable level of service. The estimated O&M requirements are generally a function of a budgetary process and are directly related to the level of service provided to customers of the utility system. Common O&M expenses include personnel salaries, customer service (billing, processing, and accounting), communications, electricity, chemicals, vehicles, and system maintenance. It is important to note that, for purposes of audited financial reporting versus cash flow budgeting, the O&M expenses are typically viewed the same under either aspect.

Debt Service

It is common practice for governmental utility systems to issue debt, often in the form of revenue bonds, for purposes of funding the cost of major capital projects. From a financial standpoint, the issuance of debt and the payment of periodic debt service requirements must be considered in the process of budgeting and setting rates. Based on GAAP, the income statement in the audited financial reports only addresses the interest portion of the debt service payment (interest expense). Similar to the depreciation expense, interest expense per GAAP is applied by for-profit entities to reduce the tax liability. Of course, this concept is of no concern to government-owned utility systems.

Debt service can be viewed similarly to a mortgage. When an individual has mortgage payments associated with the purchase of a home, the payments are made up of both prin-

icipal and interest. When filing income taxes, the homeowner receives a tax benefit for the interest paid during the year, thereby reducing the taxes owed. However, in terms of overall income, it is the responsibility of the homeowner to generate sufficient income to make both the principal and interest payment requirements, regardless of the tax implications. Utility managers must take a similar view on debt service when budgeting and rate setting, regardless of the financial reporting per GAAP.

In addition to meeting the debt service payments, governmental utility systems are typically subject to rate covenants (contractual obligations to the bond holders) requiring a minimum debt service coverage ratio. Debt service coverage is generally viewed as an indicator of the financial strength of the utility. In accordance with common rate covenant requirements, the debt service coverage ratio is typically calculated by dividing the net earnings (total revenues less O&M expenses) by the annual debt service requirement for the outstanding bonds. For the purpose of the debt service coverage calculation, the O&M expenses are exclusive of depreciation expense.

Capital Expenditures

In addition to paying for ongoing O&M expenses and required debt service, a governmental utility system will also incur actual cash expenditures associated with capital projects. Such capital expenditures can consist of payments for upgrades and expansions to existing capital facilities, construction of new capital facilities, and/or reserve transfers to provide for future funding of planned capital projects. It is prudent and necessary for utility managers to account for such expenditures in the process of developing annual operating budgets and setting rates. However, it is important to note that an income statement prepared in accordance with GAAP will not typically reflect the capital expenditures other than the annual depreciation expense associated with the cost of the new assets.

Renewal and Replacement

For purposes of budgeting and setting rates, R&R is utilized both as a means to recognize that utility facilities will physically depreciate and deteriorate with time and use, and also to provide a reasonable cash set-aside to fund ongoing replacement of such depreciated facilities. The primary difference between depreciation expense and R&R is that depreciation expense is an artificial non-cash expense used only for accounting purposes, while R&R is a real-cash requirement based on the anticipated cost to replace or rehabilitate an asset. As will be

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addressed, actually funding and performing rehabilitation projects will often extend the real useful life of an asset well beyond the artificial accounting life used to calculate depreciation expense in accordance with GAAP.

In the public utility business, replacement of worn-out or obsolete assets is rarely done on a large-scale basis. Any R&R funds are typically applied to more piecemeal replacement of some piece of equipment by one of comparable size and capability as that being replaced. Such capital expenditures maintain the system in good working order but do not generally add capacity or expand the customer base.

GAAP Versus Cash Flow

One of the primary problems with the GAAP methodology of financial reporting is that it does not provide utility managers with the information needed to understand their true financial picture without making adjustments. This lack of useful information is illustrated in the comparison of an income statement prepared in accordance with GAAP versus a comparable income statement prepared on a cash flow basis. The table is developed from actual audited financial results reported in the fiscal year 2010 comprehensive annual financial report (CAFR) for a government-owned water utility system in Florida, as rounded.

As observed from the table, the GAAP income statement indicates that the utility has expenses in excess of the revenues; in other words, the system is losing money. As an enterprise fund, a governmental utility system is expected to operate as a self-sufficient entity without the financial support of the general fund. If the system is losing money, it is not being self-sufficient.

However, the cash flow income statement tells an entirely different story. Factoring out the artificial non-cash depreciation expense, adding in the principal portion of the debt service payment (real cash expenditure), and adding the expenditures associated with capital and R&R (real cash expenditures), the table indicates that not only did the utility generate sufficient revenues to meet its expenditure requirements, there is even a surplus that can be used for other beneficial purposes (e.g., operating reserves, capital reserves, rate stabilization fund, and refunding debt).

The reason this distinction is important is because it can affect management decisions with regard to financial planning and rate setting. If management looks only at the results reported in accordance with GAAP, it may mistakenly determine that utility rates need to increase in order to eliminate the negative bot-

COMPARISON OF GAAP REPORTING VS. CASH NEEDS SAMPLE INCOME STATEMENT		
Description	GAAP Method (1,000s)	Cash Flow (1,000s)
Operating Revenues	\$ 22,700	\$ 22,700
O&M Expenses:		
Personal Services	\$ 8,400	\$ 8,400
Other Services	9,400	9,400
Subtotal	\$ 17,800	\$ 17,800
Depreciation Expense	6,400	
Interest Expense	1,700	
Debt Service (P&I)		3,700
R&R Reserve Transfer		1,100
Total Expenses	\$ 25,900	\$ 22,600
Final Balance	\$ (3,200)	\$ 100

tom line. In reality, utility managers know that certain adjustments must be made to the GAAP income statement (disregarding depreciation expense) in order to get a more realistic understanding of the financial picture. The same type of adjustments are made by outside parties such as bond holders and Wall Street rating agencies when reviewing financial results for governmental utility systems. Given this fact, it would seem reasonable for accountants and auditors to provide such adjusted income statement information in their audited financial reports.

Another Way of Looking at Depreciation

As previously described, for purposes of financial reporting, the calculation of depreciation expense is based on the estimated useful life of a particular asset. Of course, the actual useful life of a given asset can be significantly different (longer or shorter) than the estimated useful life applied for accounting purposes. The actual useful life will be dependent on how the asset is used and maintained.

Another way to visualize the differing depreciation concepts of a utility system is to think of the system as a car. However, think of it as not just a personal car, but a revenue-generating service car such as a taxicab. Assume a cab service owner purchases a new taxicab (asset) for \$20,000 cash. Also assume that, for accounting and financial reporting purposes, the taxicab has a useful/depreciable life of five

years. Under the straight-line method of calculating depreciation expense, the taxicab will be depreciated at \$4,000 per year ($\$20,000 \div 5$). As such, this will be the amount that is provided in the income statement of the financial reports prepared in accordance with GAAP. In addition, if in five years the taxicab will actually be physically and mechanically deteriorated to the point that it can no longer be used to provide service, then the depreciation expense amount is also an actual cash requirement that can be factored into the taxicab fares in order to replace the vehicle. This would be a situation in which the fares (or rates for a utility system) must be sufficient to "fully fund" the depreciation expense.

However, now assume that, in addition to funding the necessary operating expenses to provide service (e.g., gas, oil, and tires), the owner of the taxicab also allowed for funding of additional and preventative maintenance costs of \$1,000 per year that rehabilitate certain components of the vehicle (e.g., new brakes, radiator flush, and rebuilt motor/transmission). Further assume that such additional rehabilitation expenditures extended the useful revenue-generating life of the taxicab to 10 years. Under this scenario, the owner only needs to recover \$2,000 per year for vehicle replacement. This amount, in addition to the preventative maintenance costs, results in an actual cash requirement of \$3,000 per year that must be recovered in the taxicab fares.

Obviously, in the real world of business, the taxicab owner would probably not reduce the

fares to match the lower cash flow needs. However, in the world of government-owned utility systems, this may be exactly the case. Since governmental utility systems are not-for-profit enterprises and operate for the benefit of the customers, most systems only set rates to the levels necessary to meet the current and near future cash flow needs. In most instances, if the governmental utility system set rates so as to fully recover the depreciation expense as calculated in accordance with GAAP, the rates would be unnecessarily high and would generate a surplus of revenues in amounts that would be “politically unacceptable” to rate payers.

Other Considerations

It is important to note that designing utility rates is not entirely a purely financial process. There are also other factors that must be considered in designing rates that will satisfy the overall objectives (including political objectives) of a governmental utility system. Such other rate considerations include, but are not necessarily limited to:

1. *Sensitivity to existing customers.* Any proposed rate adjustments must consider the impact on existing customers, and should also avoid placing an inequitable financial

burden on any particular customer class.

2. *Comparability with neighboring utilities.* Any proposed rate adjustments must consider, and be relatively comparable to, the rates and charges applied to customers of neighboring utilities of relatively similar size.
3. *Economic development.* Any proposed rate adjustments must consider the potential for future development within the service area and ensure that the rates do not act as a disincentive for development or do not make it cost-prohibitive for future job creation.

Conclusion

It is important to understand and report depreciation of utility assets, and to set rates so as to generate funding for the rehabilitation and eventual replacement of the assets. The question becomes one of whether to fully fund the depreciation expense calculated and reported according to GAAP, or to fund the actual expenditure requirements as they occur via R&R reserves. Fully funding the annual depreciation expense assumes that assets will be replaced with brand new assets upon being fully depreciated per GAAP calculation methodologies. In reality, if utility assets are properly maintained through pre-

ventative maintenance and a proactive R&R program, the facilities will typically remain functionally useful much longer than the projected useful life applied to calculate depreciation expense.

As any utility manager knows, it is challenging and often uncomfortable to stand in front of local elected officials (the ultimate decision makers for the government-owned utility) at a public hearing and request that the utility rates be increased. This is especially true in the struggling economic environment currently facing many utility systems and their customers. If utility rates are set so as to fully fund the annual depreciation expense calculated for financial reporting purposes, the resulting rates may have to increase to levels that are not politically or economically acceptable. In addition, implementing utility rates that fully fund the calculated depreciation expense can result in excessive reserve balances, potentially bringing criticism from customers accusing utility management of overcharging for service. As such, it is generally considered more reasonable and acceptable for governmental utility systems to fund depreciation based on the actual cash need on a pay-as-you-go basis, regardless of the depreciation expense reported in accordance with GAAP. ◊