

**PHILADELPHIA WATER DEPARTMENT  
RESPONSES TO TRANSCRIPT REQUESTS**

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TRANSCRIPT REQUESTS**

**QUESTIONS 1-3**

**Dated: May 2021**

**TR-1.** WHAT COMPANY READS METERS FOR PWD? WHERE IS THAT  
COMPANY LOCATED?

**RESPONSE:**

Sensus USA Inc, headquarters located in Morrisville, NC.

**RESPONSE PROVIDED BY:** Philadelphia Water Department

**TR-2.** REFERENCE WAS MADE TO OPERATIONAL EFFICIENCIES IN THE RATE FILING, IN WHAT STATEMENT, AND ON WHAT PAGE.

**RESPONSE:**

See the Direct Testimony of Donna Schwartz, Benjamin Jewell, Brendan Reilly and Mary Ellen Senss. Issues addressed in this testimony include: (i) operational challenges facing PWD given its aging infrastructure, (ii) strategies implemented to meet operating requirements during the pandemic, (iii) deployment of the advanced metering infrastructure (AMI) program to improve operations and enhance customer benefits, and (iv) critical improvements necessary to achieve greater operational efficiencies. PWD Statement 4 at pages 12-20; 20-24.

**RESPONSE PROVIDED BY:** Philadelphia Water Department

**TR-3.** PLEASE PROVIDE THE REPORT SUPPORTING THE PRESENTATION  
“HOW MUCH IS IT WORTH?” GIVEN BY ANN BUI.

**RESPONSE:**

Please see attachment How Much is it Worth\_J AWWA Article.pdf.

**RESPONSE PROVIDED BY:** Black & Veatch Management Consulting, LLC



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# How Much Is It Worth? An Overview of Valuing Water Utilities

John Mastracchio, Andy McCartney,  
Toby Fedder, Ann Bui, Philip King,  
and Mike Lane



### Key Takeaways

Several situations for water utilities call for valuation of the water system, such as consolidation, sale, forming a new entity, and eminent domain.

Valuing water utilities requires drawing upon well-established standard valuation concepts and general approaches.

Because the water sector is subject to numerous and complex regulations, valuing water utilities entails many considerations and requires water sector and business valuation expertise.

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**W**ater utilities, both municipally and privately owned, are natural monopolies that operate in a heavily regulated industry. At times, circumstances may arise that require assessment of the value of a water system, such as when contemplating a sale, merger, or acquisition. While there are many resources for information and guidance on business valuation, a limited number focus specifically on practices, approaches, and unique considerations associated with valuing water utilities. This article is a summary of common business valuation approaches and methods with various considerations relevant to valuing water utilities.

## Background

The water sector in the United States is decentralized into approximately 50,000 water utilities and 16,000 wastewater utilities (USEPA 2019). Government-owned water and wastewater utility services have an annual revenue of about US\$116 billion. The number of private, or investor-owned, water utilities (approximately 4,800) is small compared with the number of government-owned utilities, and the combined annual revenue of private water and wastewater utilities is roughly \$15 billion (Dun & Bradstreet 2018). Though there are many more public than private utilities, market activity (mergers and acquisitions) among private water companies is more prevalent than among government-owned utilities, taking place in major markets across the country. Such merger and acquisition activities require valuation assessments. In addition, there are many other reasons municipalities may need to estimate the value of their utility systems, such as the formation of a utility authority, utility consolidation, or redistribution of capacity ownership shares.

Both government-owned and private water utilities are regulated by federal and state authorities. Water rates charged by private water companies are typically set by state public utility commissions (PUCs). State PUCs also set conditions and standards for services and often must approve long-term financing programs, capital expenditures, and reorganizations. Accountability for water rates charged by government-owned water utilities is usually ensured through municipal governance and governing boards. The US Environmental Protection Agency (USEPA), state environmental agencies, and local health agencies regulate both public and private utilities in most cases.

Deteriorating infrastructure is a critical issue for water and wastewater utilities. Water utilities must invest heavily in the coming decades to replace and update aging water treatment plants, storage tanks, pipes, meters,

and other critical infrastructure. It is estimated that water systems in the United States will need an estimated \$1 trillion in investments over the next 25 years, and sewer systems will require another \$271 billion, according to AWWA and the USEPA (AWWA 2012).

Other challenges facing the water sector are planning for long-term water supply availability, managing an aging workforce, improving public understanding of the value of safe and reliable water, addressing new and emerging contaminants and associated regulatory requirements, and generating sufficient funds to pay for infrastructure improvements (AWWA 2019). Combining these challenges with the fragmented nature of water utilities leads some to believe that the water sector is ripe for consolidation, particularly of smaller utilities, as consolidation may potentially reduce costs and improve system management, efficiency, and level of service. Some states, such as Pennsylvania, Illinois, and California, have passed legislation to encourage consolidation of smaller water systems (GWI 2016).

## The Importance of Water Utility Valuation

### Merger or Consolidation

There are many scenarios in which it may be in the best interest of all stakeholders within a utility system to consolidate or merge with neighboring systems. Consolidation or merger may be an option for utility systems lacking qualified staff resources, for utilities that haven't adequately planned for the high costs associated with maintenance of aging infrastructure, and for utilities with governing boards unwilling to raise water rates to pay for future water system needs.

Water infrastructure can have a long service life, on the order of 50 to 100 years in some cases, but too many water utilities have been slow to realize the full cost of reinvesting in their systems and to implement asset management plans. In the past, many utilities didn't have formalized, comprehensive asset management plans. As a result, some of them now face significant challenges to improve the infrastructure within their systems and, worse for some, they also lack the necessary political support to raise water rates to fund these efforts.

**Considering the sale of a public utility to a private company will bring public scrutiny, so the valuation process must meet a high standard.**

Through mergers or consolidation, some utilities may be more capable of addressing their needs by using economies of scale associated with more regional water utility systems. But before seriously considering a merger or consolidation of water systems, a thorough valuation of each should be completed to ensure that all stakeholders have a complete understanding of the value of their assets.

#### **Sale of System**

There are several scenarios in which utility management may decide to sell or lease its water system assets. For example, local governments may consider selling their water utility when faced with financial hardship. In some cases, selling the water system allows the municipality to offset significant amounts of debt and generate a significant amount of cash, and this short-term boost to revenue may help fund the immediate needs of the community. Such was the case for the City of Allentown, Pa., which executed a lease concession agreement with the Lehigh County Authority for its water and wastewater system in 2013. However, in such instances, community leaders must be cautious and evaluate all the potential impacts of the sale.

Key decisions must be based on more than the short-term benefits of such a sale so that they are made in the best interests of present and future stakeholders. The City of Fort Worth, Texas, explored its options for privatizing its water and wastewater utilities, but it ultimately decided that it was in the best interest of the city and its stakeholders to maintain the status quo.

Because municipal systems have been built and maintained with public funds, an accurate valuation of the utility system is essential before moving forward with any sale or transaction. Considering the sale of a public utility to a private company will bring public scrutiny, so the valuation process must meet a high standard. The public must be confident that the system will be sold for a reasonable price and not result in negative financial consequences down the road.

#### **Formation of Utility District/Authority**

A municipally owned utility may determine that it's in the best interest of its ratepayers to form a separate utility board, authority, or district. Such was the case for the Southern Nevada Water Authority, which formed in 1991. By taking this approach, the utility may be able to act more autonomously, address water issues, and focus on its key purpose of providing water and wastewater services to its ratepayers. Before the formation of a new entity, the existing governing body will likely be required to conduct a valuation of the system to determine

**Many terms can describe notions of value, and an appraiser should define as well as specify the standard of value being used.**

whether compensation for the utility assets is viable, and if so, the amount of such compensation.

#### **Condemnation/Eminent Domain**

A municipality may want to acquire a water or wastewater system within its jurisdictional boundaries that is owned and operated by a private company because it's in the best interest of the municipality and the public to do so. However, the municipality may encounter an unwilling seller, in which case the municipality may have the option of acquiring the utility system through condemnation or an eminent domain proceeding.

This was the case for the Casitas Municipal Water District when it acquired the Ojai District of the Golden State Water Company in California in 2017 through eminent domain. Condemnation, also called eminent domain or a "taking," is the right of a government or its agent to take private property for public use, with payment of compensation. Compensation of the owner for the utility system typically requires completion of a utility system valuation that reflects fair market value, as well as a court proceeding to settle the compensation amount.

#### **Other Situations**

There may be other situations in which a public utility may require or desire a valuation assessment. These include establishing a value estimate for distribution or redistribution of ownership of system capacity, insurance purposes, debt financing, tax or payment-in-lieu-of-tax assessment, pricing of utility services and rate-making, financial planning and benchmarking purposes, capital reinvestment planning, and loss or damage analysis. Each of these situations requires an appraiser to establish the standard of value on which the assessment is based.

### **Valuation Standards and Methods**

#### **Valuation Standards**

The American Society of Appraisers (ASA) has developed practice standards and a code of ethics for its members to follow when conducting business valuations. These practice standards include ASA Business Valuation Standards, which provide minimum criteria to be

followed by an appraiser in developing and reporting the value of a business. In addition to these, the Appraisal Foundation has a set of standards for all appraisal disciplines and has published the Uniform Standards of Professional Appraisal Practice (USPAP). USPAP standards 7 and 8 apply specifically to personal property appraisal, and standards 9 and 10 apply specifically to business appraisal, both sets of standards are relevant to the valuation of public water utilities. ASA requires its members to follow USPAP guidelines regardless of the use of the appraisal.

ASA defines appraisal and business valuation synonymously. An appraisal is the act or process of determining the value of a business, business ownership interest, security, or intangible asset. Business valuation is the act or process of determining the value of a business enterprise or ownership interest therein (ASA 2009).

**There are three approaches to determining the value of an enterprise: the income approach, market approach, and cost approach.**

In the United States, various governmental agencies have also developed appraisal regulations or guidelines that affect business appraisals, including revenue rulings promulgated by the Internal Revenue Service (IRS) and the Department of Labor. In its Bulletin 2018-33, the IRS has defined appraisal standards as those that adhere to the “substance and principles” of USPAP rather than requiring that all appraisals be prepared strictly in accordance with USPAP.

### Standards of Value

Many terms can describe notions of value, and an appraiser should define as well as specify the standard of value being used. There are several widely recognized standards of value, including fair market, investment, and intrinsic value. These are commonly defined as follows (Pratt 1989):

- **Fair market value** is the legal standard of value in many valuation situations applicable to water utilities. The definition is almost universally accepted as the cash, or cash-equivalent, price at which a property would change hands between a willing buyer and a willing seller, both being adequately informed

of the relevant facts, and neither being compelled to buy or sell. The willing buyer and willing seller are hypothetical people, dealing at arm's length, rather than any “particular” buyer or seller.

- **Fair value** is an example of ambiguous terminology used in the field of commercial appraisal, as well as in some utility rate-making. It is generally accepted that fair value is synonymous with market value or fair market value in the context of real estate terminology. However, in most states, fair value is the statutory standard of value applicable in cases of dissenting stockholders' appraisal rights.
- **Investment value** has gained virtually no universal consensus as a value based on expected earnings or monetary return to an investor, in contrast to market value, which is impersonal or detached. Within this broad meaning, there are often differences in meaning when this term is used in different contexts.
- **Intrinsic, or fundamental, value** differs from investment value in that intrinsic value represents a subjective analytical judgment of value by an analyst based on the analyst's background, skills, and experience.
- **Going-concern value**, in most cases, when used to value a business or business interest, is used to mean the total value of the entity as a going concern. In valuing machinery and equipment, such as public utility assets, an acceptable alternative to the term going-concern value is market value in place, making it clear that the individual assets are being valued as part of an operating facility.
- **Liquidation value** is the net amount that can be realized if the business is terminated and the assets are sold off piecemeal. It is not uncommon that some assets, such as machinery and equipment, have no liquidation value, since the cost of dismantling and removing the assets is greater than any resale value.
- **Book value** is not a standard of value, but rather an accounting term that means the sum of the asset accounts, net of depreciation and amortization, less the liability accounts, as shown on a firm's balance sheet. Generally Accepted Accounting Principles (GAAP) does not purport book value to be fair market value.

It is important for the applicable standard of value to be specified and defined to provide the basis and context for an appraisal report or engagement.

### Valuation Approaches

There are three approaches to determining the value of an enterprise: the income approach, market approach, and cost approach (Figure 1). These approaches are

## Three Approaches for Determining Enterprise Value



### Income Approach

Value reflects the present value of future economic benefits of owning the property



### Market Approach

Value is estimated by comparing subject property's price with the price of similar systems that have previously sold



### Cost Approach

Value estimate reflects the cost of reproducing the system, adjusting for its estimated remaining useful life and obsolescence

**Figure 1**

widely accepted by financial institutions, courts, government agencies, businesses, and society in general, and they consist of theoretical concepts and systematic methods. These approaches, described in the following sections, are relevant for estimating the fair market value of water utility systems.

#### Income Approach

The income approach (Figure 2) is based on the premise that the value of a property is the present value of

the future economic benefits of owning the property. The underlying principle in this approach is that buyers invest in assets with the expectation of receiving the anticipated future net benefits. This approach is relevant when the property being valued generates or is anticipated to generate net income, profits, or free cash flows.

There are two methods of estimating value under the income approach: (1) the direct capitalization method, or single-period model, and (2) the discounted cash

## Income Approach for Determining Enterprise Value



**Figure 2**

flow (DCF) method. The direct capitalization method measures value by capitalizing a projected net income or cash flow stream in perpetuity by a capitalization rate. It assumes there will be no variation in the capitalization rate, along with a consistent income stream or constant growth rate that does not terminate. The DCF method measures value by projecting future expected net cash flows and discounts these cash flows to present value using a discount rate (ASA 2009).

When either of these methods is used, it presumes that the cash flow stream is generated by employing all of the assets associated with the water system that are used and useful. As such, there are no additions to the value estimate under this approach for various asset components (e.g., land, water rights) that make up the system because those assets are part of the whole system and are used to generate the income stream. However, nonproductive assets, such as land held for future operations, may be added to the value in some cases.

When the hypothetical willing buyer is a privately owned water company, the DCF method in valuing water utilities is theoretically straightforward. It requires the analyst to make adjustments to historical financial statements to take into account unusual or one-time occurrences of revenues and expenses, then forecast revenues, expenses, and net earnings into the future. For

most private utilities, revenues can be estimated using the “utility basis” method, under which the utility recovers operating expenses and capital investment over time through annual depreciation and has the opportunity to earn a return on its unrecovered capital investment—i.e., its rate base. Future revenues can be derived by adding these elements together and making adjustments for income taxes. The discount rate reflects the weighted average cost of capital, which is a combination of the water company’s cost of debt and return on equity allowed by its PUC.

The traditional use of the income approach to estimate value becomes less relevant when the valuation involves a buyer that is a not-for-profit government agency, because this buyer typically follows cash basis cost-of-service principles in its rate-making and does not generate revenues in excess of expenses—i.e., net earnings or net cash flows—over the long term. Any excess earnings that may be generated contribute to the utility’s cash reserves, which are later used to fund expenses if there are revenue shortfalls or to help pay for future capital investments.

Instead of or in addition to the traditional use of the income approach, a cash flow projection may be prepared by the valuation analyst to assess the feasibility of various purchase prices by forecasting the water rates

### Market Approach for Determining Enterprise Value

Value estimated by comparing with the price of similar systems that have previously sold



### VALUE DRIVERS

Customer connections

Earnings

Net book value

Rate base

**Figure 3**

needed post-acquisition to generate sufficient utility revenues to pay for the amortized acquisition cost. This type of scenario analysis can help potential buyers assess the range of purchase prices given the water rate profile that would be required to support the acquisition and can be used to assess the investment value to the prospective buyer.

#### Market Approach

The market approach (Figure 3) is a way to determine a water utility's value by using one or more methods that compare the subject property with similar businesses that have been sold. There are two common methods of estimating value under the market approach: (1) the guideline public company method and (2) the guideline transactions method. With the guideline public company method, market multiples are derived from market prices of stocks of companies that are engaged in the same or similar lines of business and actively traded on a free and open market (ASA 2009).

Under the guideline transactions method, price multiples are derived from sale of entities involving companies engaged in the same or similar lines of business (ASA 2009). If the sales comparisons are not exactly like the properties being valued, the selling prices are adjusted to equate them to the characteristics of the properties being valued. Certain factors, such as location, date of sale, physical characteristics, and technical and economic factors relating to the transaction are analyzed for their comparability to the subject being appraised. This approach is most reliable and applicable when there is an active market providing a sufficient number of sales of comparable properties that can be independently verified through reliable sources.

The annual water utility transaction market is marginally active at best, with fewer than 100 sales and purchases of water utilities by privately owned utilities each year. Sales or purchases among municipal water systems tend to occur less frequently because government agencies usually are not interested in selling their utility assets or acquiring water systems outside their political jurisdiction. Furthermore, it is usually municipalities with jurisdiction within close proximity of the subject property that consider merging with or acquiring a water utility system, as seen with regionalization efforts such as occurred in Raleigh, N.C., in the past, where seven local utilities merged into a regional water and wastewater provider. In some cases, a municipality may need special enabling legislation or other legal authority to acquire and operate systems outside of their jurisdictional boundaries. All of these factors combine to make the market for municipally owned water systems thinly traded.

Water utility sales transactions may be considered comparable to the system being valued if the sales transactions are similar in terms of one or more of the following aspects:

- System size
- Locational/regional economic conditions
- Regulatory environment
- Type of service provided (water, wastewater, or both)
- Physical characteristics, including type(s) of source water (e.g., surface or groundwater) and treatment technologies

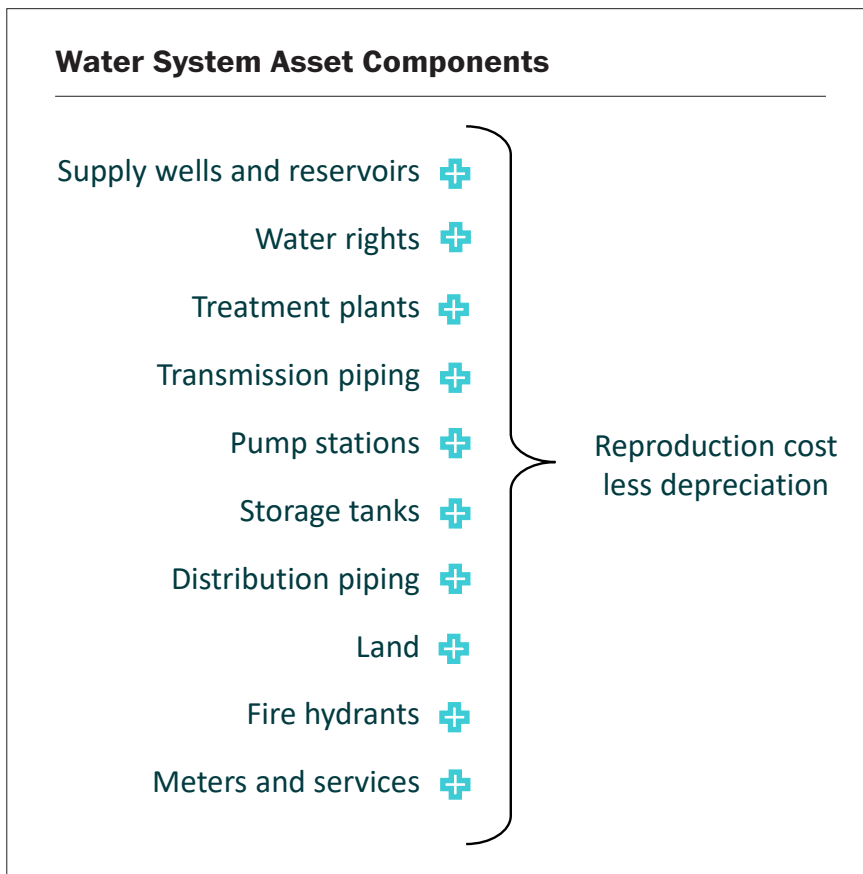
Valuation analysts must use experience and discretion to justify if a sales transaction is similar enough to the subject system to be considered a comparable sale. Because of the limited number of sales transactions that occur in the water sector and the challenge associated with obtaining relevant information on each transaction, the market approach for valuing water utility systems isn't often weighted heavily in a valuation assessment. In addition, because of the limited market for water utility systems, a discount in value due to the lack of marketability may be appropriate.

#### Cost Approach

The cost approach is based on the principle of substitution. This principle states that a prudent buyer will not

**The annual water utility transaction market is marginally active at best, with fewer than 100 sales and purchases of water utilities by privately owned utilities each year.**

pay more for a property than the cost of acquiring a substitute property of equivalent value. The cost approach is considered in situations in which a system has many tangible assets associated with it; when a grouping of assets is not frequently traded in the market; or when the asset is considered unique, such as a "special purpose" or "specialty" asset. Water utility assets are generally considered special purpose or specialty assets that are not frequently traded in the market, but the regulatory nature of water utilities decreases the suitability of the cost approach in many circumstances, as discussed next.



**Figure 4**

Under the cost approach, the value of assets is derived by subtracting the amount of depreciation from the replacement or reproduction cost of the assets (Figure 4). The value is estimated by the sum of the parts of the system—e.g., physical asset components, land, water rights, etc.

Replacement cost is the current cost of a similar new property with a utility that is the nearest equivalent to the property being valued. Reproduction cost is the current cost of producing a replica or exact copy of the property being valued using the same or closely similar materials (ASA 2020). Although the two are often used interchangeably, there are occasional circumstances in which the values can vary considerably. Additionally, there are cases in which a reproduction cost can be difficult to accurately estimate because older equipment and building methods are no longer manufactured or in use.

Various methods are used to estimate the reproduction cost of a property. For example, the detail method, also known as the summation method, assigns a current

cost to each individual component of an asset or property, then aggregates these costs so that the sum reflects the cost of the whole. As another example, the trending method estimates reproduction cost by indexing or trending historical cost to an estimate of current cost.

Depreciation in this context represents the loss in value caused by physical deterioration, functional obsolescence, and economic obsolescence. For private utilities, depreciation is also a rate-making convention that allows the utility to recoup its initial capital investment. This depreciation convention differs from asset-condition-based depreciation. However, once assets are depreciated from a rate-making standpoint, private utilities usually are no longer able to earn a return on the depreciated assets, resulting in their economic obsolescence, even if the assets continue to provide service.

As regulated monopolies, water utilities require special considerations in the valuation

process, including applying the cost approach. The economic value of the assets is influenced by the ability of private utilities to receive a return of and a return on the acquisition investment. When a PUC regulates the base on which a rate of return can be applied—i.e., rate base—the rate base is a driver of economic value of the assets. For example, if rates are based on the original cost of a plant in service, less accumulated depreciation rather than reproduction cost, then the economic value of these assets follows its treatment for rate-making. When rate base is determined using original cost less depreciation (OCLD) value, the reproduction cost new less depreciation (RCNLD) value tends to overstate the value of the utility because it is not allowed a return on investment on a “reproduction cost” rate base, which in turn limits company earnings.

Rate regulation by PUCs prevents utilities from artificially inflating plant and equipment prices to increase returns and making their customers in essence pay again for the same assets (Public Utilities Reports 1988).

It also affects the amount that a buyer would be willing to offer for water system assets, knowing that the ability to recoup and earn a rate of return on the acquisition premium may be limited. Knowledgeable buyers and sellers can consider the rate regulatory environment in the price of a public utility system, and because of the regulatory environment, the fair market value of the system will be affected. Therefore, as result of the rate regulation in a PUC regulatory environment, fair market value is determined by the rate-making process, whereby the rules associated with rate regulation affect the value of a property that is regulated (Public Utilities Reports 1988).

For these reasons, if you're using the cost approach to value a regulated public water utility, you will need to consider the rate regulation imposed by its PUC. Generally speaking, RCNLD without adjustment for economic obsolescence is not considered the best evidence of fair market value because RCNLD tends to inflate estimates and sets an absolute ceiling on market price, which may not be, and frequently is not, approached in actual market negotiations (*South Bay Irrigation District v. California-American Water Co.*, 61 Cal.App.3d 944, 976 (1976)). Taking all of this together, value estimates based on RCNLD are considered to be less relevant than other approaches, but "rate base" value used for rate-making may have a closer relationship to a water utility's fair market value.

## Other Considerations for Valuing Publicly Owned Water Systems

### Original Cost versus Fair Value Rate Base

Historically, PUCs have predominantly followed a standard and practice of using OCLD value (with various adjustments) as the rate base in which the private utility may recover its capital investment and earn a rate of return on the unrecovered asset value or rate base. However, over the past decade, some states, such as Pennsylvania, Texas, and North Carolina, have adopted what is termed a "fair value" rate base, which allows the rate base for rate-setting purposes to reflect the price paid for utility assets following an appraisal or negotiation process rather than being constrained by OCLD value. In states such as Illinois, state legislation allows such rate base treatment to apply only to transactions where a private utility acquires a small distressed municipally owned utility. This has provided an added incentive for private utilities to acquire small, struggling systems. In addition, modification of how rate base is determined by regulators in these states may alter the base from which company earnings are derived, ultimately affecting how utilities are valued in these areas and situations.

### Compensation for Third-Party-Funded Assets

Contributed capital for a utility consists of assets and cash provided to the utility from developers or customers. A typical contributed capital transaction involves a real estate developer building a subdivision, constructing the distribution system assets (e.g., distribution piping, services, hydrants, meters), and then contributing them to the utility at no cost. In the private utility regulatory framework, equity that results from contributed capital usually is not included in rate base; therefore, it does not affect the fair market value of the system. Under such a regulatory framework, buyers would not be allowed to recoup their investment in the utility above and beyond its pre-acquisition rate base, which tends to exclude contributions, in order to prevent the utility from earning monopolistic profits and to protect

**RCNLD without adjustment for economic obsolescence is typically not considered the best evidence of fair market value because it tends to set an absolute ceiling on market price, which may not be approached in actual market negotiations.**

customers from significant rate impacts. In essence, these assets are economically obsolete. Any compensation by a buyer of the utility system for the donated or contributed assets would thereby reduce the buyer's return on investment. Therefore, it is likely that a willing buyer would significantly discount the value of these contributed assets when considering an offer to purchase the utility system.

Similar to developer-contributed assets, utility assets funded through state and federal grants are typically excluded from a utility's rate base, because the utility did not expend its own capital to construct the assets. Under PUC regulation, utilities are allowed to earn only a rate of return on the cost incurred to devote the asset to public service. From a valuation standpoint, these assets may indeed have value in providing utility service to customers, but when considering the build-up method of individual utility asset components as under the cost approach, the economic obsolescence of these assets should also be considered. If the buyer of the water

system is precluded from including the original or reproduction cost of these assets in its rate base and thereby unable to recoup the price it paid for these assets, it is likely that a willing buyer would discount the value of these assets when considering an offer to purchase the utility system.

#### Customer Rates

The valuation of water utilities, both privately and municipally owned, is often influenced by considerations for customer rates. For example, in some states, such as California, PUC regulators consider a “rate-payer indifference test” in their decision to approve or deny a water utility merger or acquisition. This test prohibits a new owner from raising water rates on customers

**The valuation of water utilities, both privately and municipally owned, is often influenced by considerations for customer rates.**

of the system post-acquisition simply because of the change in utility ownership or as a result of the purchase transaction.

In the municipally owned utility setting, potential municipal system buyers develop a post-acquisition cash flow forecast and then assess a range of purchase prices that will result in limited or no customer rate impacts post-acquisition. A purchase offer may also include a commitment by the buyer not to raise utility rates, or set limits on rate increases, along with requiring commitments by the buyer to reinvest in the system infrastructure by a certain amount each year. For example, as part of the acquisition of the City of Lehigh’s water and wastewater systems by Lehigh County Authority in 2013, a concession agreement was signed between the city and the Lehigh County Authority that contained such rate adjustment and capital reinvestment provisions. These provisions will affect what buyers are willing to pay for utility systems, and cash flow projections and water rate scenario analyses that account for them are usually completed to assess acquisition feasibility.

#### Additional Factors

Keeping in mind the land associated with water treatment plants and pump stations, the value of real estate

or land associated with utility assets used to provide utility services is typically already included in the value estimates under the income and market approaches. Together with the other assets of the system, real estate assets are used to provide utility service and generate revenues and earnings. However, land assets are typically included in the summation of the value of the asset components under the cost approach. In addition, it may be appropriate to value land assets that are not directly part of the utility system (not determined to be used or useful) separately under the income and market approaches, particularly if these land assets could be rezoned and developed for another use besides providing utility services.

When considering acquisition adjustments to rate base as a result of merger or utility sale, PUCs may consider cost savings from economies of scale or synergies with the other water systems owned and operated by the buyer of the system. These synergies may allow the regulated utility to keep its rates unchanged while modestly increasing the rate base for which it earns returns. In these cases, the potential increase in rate base due to an allowable acquisition adjustment may affect the fair market value of the utility system.

Under the specific circumstance of eminent domain, state law regarding a municipality taking control of a private water system may require the municipality to compensate the private water utility for severance damages in addition to the fair market value of the utility system. Severance damages may be relevant when the property acquired through eminent domain is part of a larger property and where there is injury or damage to the remainder of the property not taken, resulting in a lower fair market value for the remaining property. Severance damages are often determined on the basis of the difference between the fair market value of the remainder of the property before it was taken and the fair market value of the remainder of the property after it has been taken.

A discount to the valuation estimate for lack of control may be appropriate in some cases, such as when the purpose of the valuation is redistributing ownership of system capacity, and there is a minor percentage interest of a water utility to be acquired or sold (i.e., less than 50% of a utility and/or with no controlling interest). Because of this relative lack of control of a minor ownership share of a utility, it may be appropriate to apply a discount to the value of the pro rata portion of the water utility interest.

In the case in which a municipality wants to acquire a private utility, property taxes that are paid by the private utility may be a cost savings for the acquiring

municipality if it is not required to pay property taxes as a result of its tax-exempt status. Depending on the situation, this reduction in utility cost may affect what municipal buyers are willing to pay for the utility or may simply result in lower utility rates for customers post-acquisition. When deciding about an acquisition, the municipal buyer should consider the utility cost savings from the avoidance of paying property taxes as compared with the lower tax revenue accrued to the municipalities levying the property tax.

In situations in which a utility or municipality desires to value a component of a water system rather than the entire water enterprise or water company, care must be taken to select and apply the most relevant valuation methodologies. This situation could arise when two or more municipalities jointly construct a pipeline or treatment plant and share in the cost and ownership of the facility. In this case, there is often an intermunicipal agreement specifying how the cost of the facility is initially shared among the parties, and when and how the facility ownership may be redistributed in the future. When considering how to value the redistribution of facility or capacity ownership, the cost method is often used because of the unique nature of these kinds of assets and the terms of the agreements among their owners.

## A Complex Process

Estimating the value of water utilities is often necessary for the consolidation, merger, or acquisition of systems, and it may be desired or required for other purposes such as insurance, debt financing, and capital reinvestment planning. The basis used to assess the value of water utilities comes from the approaches and methods used in business valuations. However, valuing water utilities is a complex process because of the heavily regulated nature of the water sector. Many special considerations are necessary for a complete and accurate valuation, requiring knowledge and experience of business valuation principles as well as in-depth water sector knowledge. Since public water systems have been built and maintained with public funds, significant rigor is required to estimate their value before moving forward with decisions that affect the system's customers and its future operation and management. 💧

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