

THE BUSINESS OF WATER: OVERVIEW AND CONTEXT

John J. Boland

The Johns Hopkins University
Baltimore, MD 21218

OVERVIEW

Background

The 1999 Annual Meeting of the Universities Council on Water Resources, held at Kamuela, Hawaii, included a full day of papers and discussion on issues associated with privatizing urban water and wastewater utilities.¹ This is a topic of intense interest to many of those operating municipal utilities, and one that has stimulated heated debate in the public policy, resource management, and academic communities. The issues are neither straightforward nor obvious. Even the usual name for this phenomenon – “privatization” – is misleading. In fact, the debate is concerned with a wide variety of strategies involving various combinations of public and private sector roles. Early exchanges between proponents and opponents of increased private sector participation were often marked by mutual accusations of blind ideology and/or self interest. Predictably, little information was exchanged in such an intellectual climate.

But the phenomenon under discussion is a real one of considerable current interest. Investor-owned water and wastewater utilities have existed in the United States since the beginnings of the respective industries. Private sector participation in the form of contracted services also has a long history. What is new is a greater awareness of the many possible flavors of “privatization” and an apparent willingness to look more closely at the advantages and disadvantages of alternative approaches to providing water services.

This relatively sudden flowering of interest follows decades of inattention. Transfers between government and private sector ownership or operation were infrequent, attracting little attention beyond the affected communities. For many years, the investor-owned segment of the water industry had been roughly constant at about 14 percent of population served. The investor-owned segment of the wastewater industry was generally considered to be negligible. In fact, the private sector could be described as the “silent partner”

in urban water services. But the partner is silent no more. At least not in Atlanta, Indianapolis, Chattanooga, Milwaukee, Oklahoma City, or in many other places. Financial, regulatory, and citizen pressures are causing city after city to investigate and, in some cases, implement partnerships with private firms. Often, these arrangements are eagerly sought by political leaders as a quick solution to their problems.

But this is uncharted territory for the great majority of water professionals and academics. After spending whole careers in a relatively stable industry, where public-to-private ownership or operating transfers were rare and unremarkable, many find the evolving menu of options daunting, if not confusing. It is difficult to know what the key issues are, much less how to analyze them. The 1999 technical session at the Hawaii meeting was intended to begin a process of education for UCOWR members, one that has been well received so far. This issue of *Water Resources Update* is intended to continue that education process.

Summary

The papers in this volume have been selected to provide a range of perspectives and emphases, and above all to be both provocative and useful. But, taken as a whole, they are not comprehensive. There are issues and points of view that are not represented here. Still, the coverage is considerable.

Paul Seidenstat has conducted extensive studies of the opportunities for privatizing traditional government services, including water and wastewater. In this volume, he provides a balanced and careful presentation of the various forms of private sector participation in the water industry. He also describes approaches that have been taken to inject competitive behavior into an industry that is fundamentally monopolistic.

Seidenstat is followed by Janice Beecher, who is widely known for her close attention to the public regulation of investor owned utilities. Here she approaches the privatization issue from the perspective of public policy, laying out the challenges presented by the contract operations and private ownership models of

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privatization. Various means of addressing those challenges are discussed, ranging from conventional economic regulation to structured competition.

Adrian Moore argues effectively for long-term contractual relationships between public agencies and private sector operators, pointing out a number of advantages over short-term arrangements. He believes that properly structured long-term contracts can lead to significant gains in the effectiveness and efficiency of utility operations. However, he also mentions several concerns, as well as a number of research needs.

Alan Manning and Dave Mason approach the subject from a completely different perspective. They argue that the instances of superior performance by private sector organizations result from a fundamentally different mindset -- one that is business-driven and antithetical to the monopolistic thinking characteristic of government operations. Manning and Mason argue that the performance of government organizations can be dramatically improved by interventions designed to change the culture and mindset -- to replace monopolistic thinking with business-driven "New Think" attitudes.

On the other hand, Del Gardner reminds the reader of the inherent power of the private sector profit incentive to force efficient and socially desirable behavior. Using data taken from four water systems in Utah, he points to evidence for greater efficiency in the private sector operations. But, at the same time, he documents explicit discrimination in favor of public sector operations, in the form of tax relief and subsidized capital costs. Gardner concludes that taxes and subsidies should be uniformly applied to public and private water operators.

At the time of the 1999 UCOWR meeting in Hawaii, Jim Roumasset served as Rapporteur for the privatization technical session. He has kindly provided an edited version of his Rapporteur's Report, which provides a cogent summary of the presentations at that session (some of which are not represented here), and Roumasset's own observations.

Two shorter, more personal comments are included in this volume. Robert K. Davis draws on a lifetime of experience with water management -- serving at various times as a researcher, academic, advocate, and government official. Citing a number of formative experiences from that career, he argues strenuously for the economic and practical common sense of private sector participation in the water and wastewater industries. Charles Howe provides a valuable counterpoint by reflecting on the experience of Great Britain since the near-universal privatization of public

utilities in the 1980s. He notes rather different results in different industries, ranging from apparent success in gas, electricity, and telecom industries to chaos in the railroads. In the water and wastewater industry, the picture is much cloudier, including public discontent with large tariff increases, little evidence of operational efficiencies, and general disappointment with the efficacy of regulation.

Even this skeletal summary of these papers must suggest a topic with many layers, nuances, perspectives, and details. After reading this volume, no one will believe that their education in these matters is complete. However, we do hope that what follows is a useful beginning.

CONTEXT

In considering any change in ownership or operating responsibility for water or wastewater service, it is necessary to consider expected changes in the user tariffs. This is not the only decision criterion, of course, but it is one that often assumes great importance. Most of the authors in this volume make reference to impacts on user charges. But fees and charges paid by consumers do not arise directly from economic efficiency, or lack of it. They do not depend directly on private sector/public sector choices, on management incentives, on accountability, or on many of the other improvements identified here as worthy of attention. User tariffs are designed to match revenues to revenue requirements, and as such are based on accounting data. Certainly, many aspects of ownership, management, and finance ultimately determine those accounting data, but the differences between government-owned and investor-owned ratemaking are more extensive. Del Gardner raises this issue, using data from several Utah utilities. But comparisons made in his and other papers suggest a need for a more detailed exposition.

Accordingly, some illustrative accounting data are presented here. Revenue and expense statements are summarized for two utilities identical in every way except for ownership and resulting regulatory treatment. For various reasons, it is convenient to approach this comparison by taking actual data from an investor-owned utility, then modifying those data to simulate a hypothetical government-owned utility. The original data, for a recent year, are generally based on actual results for a small water and wastewater utility serving a community of about 4,000 persons in a Middle Atlantic state. The utility is and always has been investor-owned. It is subject to rate of return regulation by the relevant state commission. In adjusting financial results to simulate a government-owned operation, a number of assumptions are required. These are discussed below.

Operating Revenue

The operating revenue for the investor-owned utility reflects a tariff adopted pursuant to a recent regulatory order. The rates and charges have been set in accordance with the allowed rate of return on rate base. However, since the new tariff level is significantly different from the one in effect just before the change, water use has been adjusted slightly downward consistent with the expected price elasticity of demand. Rates, charges, number of connections, and adjusted water use then produce the operating revenue.

In the case of the government-owned utility, operating and maintenance expenses and other costs are used to calculate the revenue requirement. It is assumed that operating revenue will equal the revenue requirement. This implies the further assumption that the government utility has adjusted the tariff so as to compensate for any price elasticity effect. This may result in higher water use than in the case of investor-owned operation, which would require upward adjustment to variable operating cost (and, possibly, to capital costs), but these second-order adjustments have not been made here.

Operating and Maintenance Expenses

Much of the discussion in this volume addresses the efficiencies that a profit-oriented private sector operator may bring to water and wastewater service. It is widely believed that privatization will result in lower operating costs and lower maintenance costs. However, despite substantial anecdotal evidence, there is little in the way of careful analysis to provide quantitative support for this belief. Accordingly, the government-owned utility in this example will be assumed to have the same operating and maintenance costs as the investor-owned system. In this way, the reader can consider the overall impact of various levels of efficiency gain with the aid of simple mathematics.

Taxes and Regulatory Expense

It is assumed here that the government-owned utility is unregulated and that it pays no property, gross receipts, franchise, inventory, or income taxes. Therefore, all items in this category are zero for the government utility. Note that some government-owned utilities pay

some taxes, or make payments in lieu of taxes. But the assumption used here is consistent with the more general case of no tax payments.

Cost of Capital

Investor-owned water and wastewater utilities typically obtain capital from three sources: customer contributions (connection fees, retained earnings, etc.), debt (e.g., long-term mortgage bonds), and equity (funds contributed by shareholders). The amounts of capital in use by the investor-owned utility are approximately \$3.2 million in customer contributions, \$1.2 million in debt, and \$1.1 million in equity. Total capital is, therefore, \$5.5 million.

The state regulatory commission does not permit the investor-owned utility to depreciate or earn a return on customer contributions. Therefore, the cost of this form of capital is zero. The cost of debt is the annual interest expense (10 percent). Because of the workings of rate of return regulation, it can be assumed that the net cash flow actually returned to shareholders approximates the cost of equity (about 12.4 percent).

The government-owned utility is assumed to have the same invested capital (\$5.5 million), and the same customer contributions (\$3.2 million). The remaining \$2.3 million is assumed to be financed by debt, in this case government revenue bonds, with an effective interest rate of 7 percent. So the total cost of capital to the government utility is \$161,000 per year.

Comparison

Table 1 shows the revenues and expenses for the two utilities being compared. The first line contains the end result: the revenue requirement for the government-owned utility (\$757,500) is only 75 percent of the revenue collected by the investor-owned utility. Depending on how the tariff is designed, this could translate into water prices a full 25 percent below those charged by the private sector utility. But in order to understand this result, it is necessary to look at the causes for such a large discrepancy, and to look at factors that may mitigate the difference.

Table 1: Revenue and Cost Comparisons for Alternative Ownerships

	Actual Investor- Owned Utility	Hypothetical Government-Owned Utility
Operating Revenue (from user charges)	1,004,000	757,500
Expenses		
Variable operating expense	74,300	74,300
Fixed operating expense	288,900	288,900
Maintenance expense	144,700	144,700
Depreciation expense	88,600	88,600
Total expenses	596,500	596,500
Other		
Rate case expense (amortized)	7,700	0
Income taxes	89,100	0
Taxes other than income	59,400	0
Total other	156,200	0
Utility Operating Income (Revenue less Expenses less Other)	251,300	161,000
Cost of Capital		
Interest expense	115,200	161,000
Net cash flow to owner	136,100	0
Total Cost of Capital	251,300	161,000
Balance	0	0

The difference in calculated revenue requirements is \$246,500. The largest part of this is due to exemption from taxes. Income and other taxes not paid by the government operator total \$148,500. This does not represent an efficiency gain for government ownership, it is simply a transfer not made. In more pragmatic terms, if the local government were to acquire the privately owned utility described here, all levels of government would lose \$148,500 in tax income. This would be ultimately recovered by either increasing tax rates or other taxes, or reducing government services, or both. On balance, the customers of this utility may be better off, but society as a whole is not.

Regulatory expenses are also avoided by the government operator in this example. If it can be assumed that the government sets tariffs and terms of service that are not markedly inferior to those that would be set by a regulatory commission, then this avoided expense represents an efficiency gain for public ownership. It is, however, small (\$7,700).

The remaining item is the \$90,300 reduction in the cost of capital. There are a number of reasons for this difference: interest payments to holders of government bonds are partially or entirely exempt from income tax, so these bonds can be sold with significantly smaller yields; governments diversify risk much better than private sector corporations, so interest rates have low risk premiums; there are no equity holders in the government operation, so no part of the capital return will be subject to individual income tax or to investors' risk premiums. These effects describe a mixture of transfers (tax exemptions) and efficiency gains (risk diversification), with the transfers probably explaining the largest part of the apparent savings.

Altogether, of the \$246,500 difference in revenue requirements, some amount more than \$200,000 can be explained by transfers required of the investor-owned utility but not required of the same utility when owned by government. As noted by Del Gardner, this constitutes "explicit discrimination" in favor of government ownership. The balance, probably at least \$20,000, represents true efficiency gains attributable to

government operation (avoided regulatory expense and risk diversification).

But most of the papers in this volume speak of efficiency gains attributable to private sector operation. To the extent that these efficiencies are present in the investor-owner utility described here, and are not reproducible by the alternative government operator, then operating and maintenance costs for government operation should be increased, along with the resulting revenue requirement.

In this example, depreciation expense is not subject to reduction, and variable operating expense may be relatively independent of operator efficiency (it consists of electric power and chemical costs). The remaining operating and maintenance costs total \$433,600. If the private sector operator is 5 percent more efficient in these areas, then the required increase in O&M costs for the government operator would roughly balance the efficiency gains attributed above to government operation. In order to mitigate both the government efficiency gains and the effect of the transfers required of the private operator, the government O&M costs would have to be increased to \$680,100, implying that the private operator has realized efficiency gains on the order of 36 percent.

Conclusions

This example is, of course, a single observation, not necessarily representative of the industry. But the data are taken from an actual utility, and they are not considered atypical or particularly distorted by any other factor. Several things can be concluded from this comparison:

- There are possible efficiency gains that are unique to government operation (avoided regulatory expense and risk diversification). But in this example, these gains are relatively small, well within the range of potential efficiency gains commonly attributed to private sector operation.
- The taxes and other transfers required of investor-owned utilities are relatively large and constitute economic discrimination in favor of government ownership. In this example, the private operator must have realized efficiency gains on the order of 36 percent to compensate for this discrimination.
- In situations similar to the one described here, it appears very likely that a government operator can offer lower tariff levels than the investor-owned alternative, even in the presence of fairly substantial efficiency gains by the private operator.

But, as noted above, tariff level is not the entire story, nor are the results just noted the end of any story. This is simply offered as context for the much broader and better-elaborated papers to follow.

John J. Boland is Professor at the Johns Hopkins University, specializing in environmental and public utility economics. He has a Ph.D. in environmental economics from Johns Hopkins University, as well as prior degrees in engineering and government administration. Prior to entering academic life, he held management positions at an urban water utility and a regional water/wastewater utility. He has worked in the field of urban water supply for more than 35 years, serving as consultant at every level of government and in more than 20 countries.