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A Framework for Evaluating Water System Ownership and Management Alternatives

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Introduction

Water utilities in the United States are facing the staggering costs of maintaining aging system infrastructure, meeting the demands of population growth, and complying with increasingly stringent water quality regulations. The Congressional Budget Office estimates annual investment needs for drinking water systems to be between \$11.6 and 20.1 billion over the next 20 years.ⁱ To compound the problem, water is frequently under-priced. A 2002 survey by the General Accounting Office estimates that for 29 percent of drinking water utilities, user charges do not cover the full cost of providing water service.ⁱⁱ

Most people in the U.S. are served by publicly owned water systems, but the fiscal pressures facing local governments have led some municipalities to look to the private sector for the financial and technical resources necessary to expand systems, address deferred maintenance needs, and upgrade infrastructure to meet new water quality standards.ⁱⁱⁱ At the same time, since the 1980s the U.S. water industry has been transformed by corporate consolidation among the nation's largest investor-owned utilities (IOUs), and by the increasing presence of multinational corporations specializing in utility management.^{iv}

Increasing private-sector involvement in water supply and services has not been without controversy. Public opposition to water system privatization in cities like Stockton, California, have brought the issue considerable media attention and sparked public debate. In addition, some policy makers are concerned about the potential for foreign-owned water companies to use international trade agreements to challenge domestic environmental laws or other regulatory requirements.^v

Public and private firms face different constraints and incentives in the operation and management of water systems. Given these differences, when deciding to replace one ownership model with another, it is important to effectively and systematically evaluate alternatives, and establish a basis for decision-making that provides the best potential for meeting local needs and priorities. In the politically charged environment of municipal governance, a systematic evaluation of alternatives can help improve the outcome of such decision-making processes.

Project Purpose

The purpose of this project was to develop a framework to assist municipal decision-makers with evaluating ownership and management alternatives for retail water distribution systems.

Our framework assesses three scenarios for changing the ownership and management structure of a publicly owned water system:

- **CIP:** Continued public ownership with implementation of an internal program to increase operational efficiency, referred to as a Continuous Improvement Program
- **PPP:** Outsourcing operations and maintenance responsibilities to a private company through a contract, referred to as a public-private partnership
- **Asset Sale:** Selling the water system assets to a private company

For systems currently under private ownership, our framework assesses the implications of public acquisition of the water system, or **municipalization**.

Our intent is not to recommend one ownership model over another, given the wide diversity of circumstances and priorities at the local level. Rather, our framework is intended to promote a systematic decision-making process, identifying potential tradeoffs between different management objectives and recommending actions to improve performance under each alternative.

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Approach

To identify key considerations associated with each decision scenario, our framework identifies ten management objectives that decision-makers should consider in determining which water system

- Management Objectives**
- Operational efficiency
 - System reliability
 - Water quality
 - Customer satisfaction
 - Local control
 - Local accountability
 - Rate affordability
 - Water conservation
 - Supply reliability
 - Public acceptance

ownership model best addresses local priorities.

For each decision scenario – CIP, PPP, asset sale, or municipalization – our framework evaluates the performance of the associated ownership model in addressing each of the ten objectives.

Where applicable, the framework recommends actions that can be taken to increase the likelihood of attaining each management objective.

Our framework is informed by four primary research elements:

1. A comparative analysis of the public and privately owned water systems operating in the City of Thousand Oaks, California
2. Legal research conducted by students at the University of California Los Angeles School of Law
3. Interviews with water sector experts, including public officials, water industry executives, utility managers, regulatory officials, and non-governmental research and advocacy personnel
4. An extensive literature review

Thousand Oaks Case Study

Thousand Oaks provides a unique opportunity to compare public and privately owned water systems operating in the same geographic area and paying the same wholesale cost for water. Our comparative analysis assessed five aspects of utility operations:

- Operational efficiency
- Rates
- System reliability
- Environmental management
- Customer satisfaction

The results of this comparison were used to inform our conclusions and recommendations under the ten management objectives evaluated in our decision-making framework.

We used the indices listed in **Table 1** to measure utility performance in our Thousand Oaks case study.

Table 1: Indices for comparative analysis

<p>Operational efficiency</p> <ul style="list-style-type: none"> • Operating ratio (annual operating expenses divided by annual operating revenue) • Annual operating expenses, less uncontrollable costs, per customer connection • Labor expenses per customer connection • Salary per job description <p>Rates</p> <ul style="list-style-type: none"> • Monthly meter charge for residential connections • Quantity rate per hundred cubic feet (HCF) for residential connections <p>System reliability</p> <ul style="list-style-type: none"> • Return on assets (net income over total assets) • Debt ratio (total liabilities over total assets) • Unaccounted-for water as a percentage of total water purchases • Main breaks per unit of annual output • Annual maintenance expenses per length of pipe • Average water pressure at customer connections <p>Environmental management</p> <ul style="list-style-type: none"> • Number of annual water quality violations from California Department of Health Services (DHS) • Number of annual DHS citations for failure to meet monitoring or reporting requirements • Per capita water use (gallons per capita per day) • Signature of the California Urban Water Conservation Council’s (CUWCC) agreement to implement water conservation best management practices (BMPs) • Meeting filing requirements for CUWCC BMP implementation reports • Implementation of CUWCC BMPs
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Customer satisfaction²

- Customer assessment of water provider performance in the following areas:
 - Service
 - Rates
 - Water pressure
 - Water conservation
 - Call center response
 - Billing
 - Community involvement
- Customer opinions regarding:
 - Public versus private utility ownership
 - Foreign ownership of water utilities

Legal Research

To address the management objectives of local control and local accountability, our research partners at the UCLA School of Law focused on potential mechanisms for foreign-owned water companies to use international trade agreements such as the General Agreement on Trade in Services (GATS) and the North American Free Trade Agreement (NAFTA) to challenge domestic environmental laws or other regulations governing water service provision.

Results and Discussion

Thousand Oaks Case Study

Our research identified two primary differences between the public and privately owned water utilities in Thousand Oaks:

1. The privately owned utilities operate more efficiently than the public utility on three of the four indices we assessed
2. The public utility charged significantly lower rates than the privately owned utilities for the 15-year period we examined

Figure 1 shows the results from one of the efficiency metrics used to compare the Thousand Oaks utilities: annual operating expenses per customer connection.

Despite their greater operational efficiency, the private utilities do not charge lower rates for water. This finding may be attributable to higher tax rates and cost of capital for IOUs, as well as to their allowable profit under state regulation. **Figure 2** shows the 15 year water quantity rate history for the three Thousand Oaks providers.

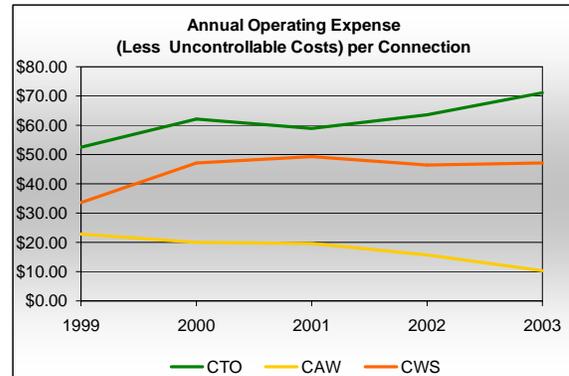


Figure 1: Annual operating expense per connection³

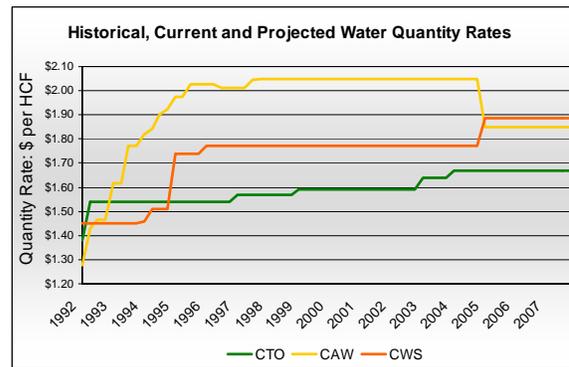


Figure 2: Water quantity rates

There was no significant difference between the utilities on the basis of infrastructure investment and condition, water quality, water conservation, or customer satisfaction. Our results indicate that the private companies use fewer resources to provide a similar level of service as the public utility, but charge higher rates. Though none of the Thousand Oaks utilities show inadequate infrastructure investment, the municipal utility performs better than the privately owned utilities on the system reliability indices we assessed.

Our survey of customer attitudes regarding public and private utility ownership indicates that the majority of respondents did not have strong opinions in favor of either alternative. However, as shown in **Figure 3**, respondents had strong opinions in opposition to foreign ownership of water utilities.

² Using a stratified random sampling technique, we sent a mail survey to 898 utility customers in Thousand Oaks, and received 207 responses.

³ The three water providers are the City of Thousand Oaks (CTO), California-American Water Company (CAW), and California Water Service Company (CWS).

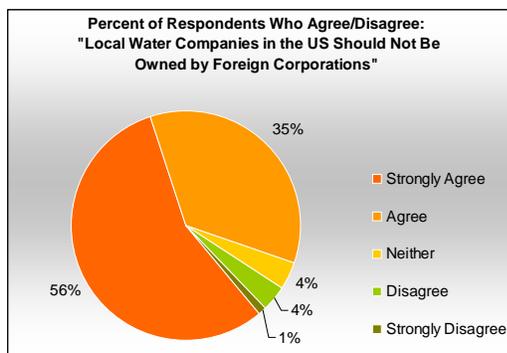


Figure 3: Public opinion regarding foreign ownership of water utilities

Legal Research

The research conducted by our partners from the UCLA School of Law indicates that though there is limited potential for foreign-owned water companies to file suit against domestic regulations under GATS and NAFTA, it is unlikely that such suits would prevail if the regulations in question apply equally to U.S.-owned and foreign-owned companies.

Conclusions

Our findings from the Thousand Oaks case study, legal research, expert interviews, and literature review were used to inform the framework we developed to guide decisions regarding ownership and management of retail water distribution systems (available at: <http://fiesta.bren.ucsb.edu/~tewater/>). Some of our key findings for each of the ten management objectives are summarized below.

Management Objectives

Operational efficiency

There may be significant opportunities for public utilities to increase operational efficiency.

System reliability

Public utilities can increase support for adequate infrastructure investment through increased financial transparency and public outreach.

Water quality

Regionalization may benefit small public utilities with insufficient resources to address water quality standards compliance.

Customer satisfaction

Customer satisfaction is most affected by service, rates, billing, the customer's experience with the customer service call center, and the water provider's community involvement.

Local control

It would be more difficult for a foreign company to use GATS to challenge domestic regulations governing water service provision than NAFTA, which only applies to Mexican or Canadian companies.

Local accountability

PPP contracts should address the issue of accountability by clearly defining the parties' respective roles and responsibilities.

Rate affordability

Under asset sales, municipal intervention in PUC rate cases can be an effective mechanism for ensuring rate affordability.

Water conservation

Water conservation should be promoted at the regional or state level, due to lack of incentive at the local level.

Supply reliability

Publicly owned utilities may have greater opportunities with other public agencies to address water supply.

Public acceptance

Public acceptance is most problematic with the two privatization alternatives – PPP and asset sale – due to ideological considerations, reduced local control and accountability, and the potential for rate increases and staffing reductions.

In conclusion, we do not find any particular ownership model to be inherently superior. However, the public and private sectors have distinct advantages and disadvantages in addressing particular management objectives. Thus, the decision to implement a different ownership or management structure at a retail water distribution system should include a systematic assessment of priorities, and an evaluation of potential tradeoffs between management objectives for each ownership alternative under consideration.

ⁱ Congress of the United States, Congressional Budget Office (2002). "Future Investment in Drinking Water and Wastewater Infrastructure," p. ix
ⁱⁱ United States General Accounting Office (2002). "Water Infrastructure: Information on Financing, Capital Planning, and Privatization," p. 21
ⁱⁱⁱ National Research Council (2003). "Privatization of Water Services in the United States: An Assessment of Issues and Experience," p. 1
^{iv} National Research Council (2003), p. viii
^v Desalination Task Force (2003). "Draft Desalination Issues Assessment Report," p. 7