

# **Report for 2004TX151B: Assessment of Four Economic and Managerial Models for Operation of Public Water Systems in Texas**

- unclassified:
  - No publication.

Report Follows

# Assessment of Four Economic/Managerial Models for Operation of Public Water Systems in Texas Preliminary Report

This report provides an initial review of research completed to date and the preliminary results of the study entitled, “Assessment of Four Economic/Managerial Models for Operation of Public Water Systems in Texas.” The project seeks to provide a comparative analysis of the four major modes in which water systems in Texas are owned and operated according to cost and quality of service. Cost is measured as the monthly cost to residential customers of standard volumes of water, 5,000 and 10,000 gallons. Quality of service is measured by three proxies: level of operator training, incidence of drinking water quality standards violations, and frequency of complaints to the state regulatory agency against providers. Because scale is such an important consideration in water service provision, systems were broken into groups for most analyses, according to the population served.

## Research Completed

The bulk of the research for this project has been completed. The research has consisted of two primary methods; collection of data maintained from databases maintained by the Texas Commission on Environmental Quality (TCEQ), and case study interviews with water system managers and utility owners across the state. TCEQ data were collected in a series of visits to that agency. Data for TCEQ’s various programs are managed by different individuals and with different protocols, so multiple visits were required. Specific queries were written to extract data from the Water Utilities Database (WUD). Rate data for water supply corporations and investor-owned utilities were obtained by digging through paper records on file at TCEQ. District water rates were obtained via a series of phone calls to various districts and the private companies with which districts contract for management services.

A case study methodology was selected to provide insight into the meaning of the TCEQ and independently-collected water rate data. Small and large utilities in the four ownership types (municipal, districts, investor-owned utilities, and water supply corporations) were interviewed. To date, six interviews have been performed with two municipal utilities, one district, two investor-owned utilities, and one water supply corporation.

**Table 0.1 Interviewees, Case Studies**

<b>Interviewee</b>	<b>Provider Type</b>
Aqua Water Supply Corporation	non-profit
Aqua Texas	investor-owned
City of Flatonia	municipal
City of Austin	municipal
Water Management, Inc.	investor-owned
Travis County WCID #17	district

Data analysis is almost complete. Data have been compiled for the cost and quality of service dimensions; some data are still being collected on water rates charged by districts. A  $\chi^2$  (chi-squared) analysis of the quality of service data is being performed to identify the significance of patterns according to ownership types.

## **Preliminary Findings**

Findings are reported according to the various dimensions measured. Across the range of populations served and irrespective of provider type, it is clear that economies of scale are important. Those who are supplied water by larger systems pay less for the services received, can expect a lower incidence of drinking water quality standard violations, and have higher-trained professionals managing their systems.

### *Cost of Water*

Investor-owned utilities are most expensive. Water supply corporations and districts fall in the middle, and municipal utilities are least expensive. In the smallest communities, the difference between the average price for 5,000 gallons per month in a municipal system and an investor-owned system is about \$13 (\$20 vs. \$33). In larger communities, up to 50,000 residents, the difference is similar, about \$12, but the absolute values shrink (\$16 vs. \$28).

### *Operator Training*

Districts have more trained operators per system than water systems of the other service provider types, across population groups.

### *Drinking Water Quality Standards*

On the surface, it appears that investor-owned utilities have a higher incidence of violations of water quality standards than other utility types.  $\chi^2$  analysis indicates that incidence of water quality standard violations in the privately owned utilities is significantly larger than the predicted incidence. When the same  $\chi^2$  analysis is performed controlling for utility size, incidence of violations in communities of less than 500 residents is especially high for privately-owned utilities. However, in the 501-5,000 population bracket, IOUs contribute minimally to the value of  $\chi^2$ , indicating that the incidence of violations in IOUs of this size is proportional to their representation in the sample set.  $\chi^2$  tests were not performed for larger population brackets because the smaller sample size in the larger population brackets renders the  $\chi^2$  analysis unreliable.

### *Customer Complaints*

The TCEQ receives a greater number of complaints from residents who receive services from water supply corporations and investor-owned utilities than from those who receive services from districts or municipalities. The reasons why this might be are unclear.

## **Papers in Progress**

The only paper currently in progress is the grantee's thesis. The thesis will be completed in May 2005.

## **Presentations Made**

The grantee and his advisor have made one presentation to date. This presentation was made to faculty and students of the LBJ School of Public Affairs at the University of Texas at Austin. Presentation slides are attached.

The grantee is scheduled to make a presentation to the Texas Water Development Board in the next month, and is also slated to participate in a Texas Water Resources Institute training session for water utilities in July.

## **Awards Received**

The grantee has not received any new awards as a match to this project. He was awarded the Walter L and Reta Mae Moore Graduate Fellowship in Water Resources in Spring 2005 by the Environmental and Water Resources Engineering Department. This \$2,000 award was in recognition of his leadership within the department.

## **Complementary Research/Follow-Up**

While the grant funds were used in the previous semester of the project, the research continues independently. The funded research formed the basis for the grantee's thesis project, which will be complete in May 2005. No additional grants have been received, and specific follow-up research on this specific project is not currently planned.

## **Use of Grant Funds**

Grant funds were used to pay for 1 semester of a graduate research assistantship for the grantee, in the Fall of 2004. During that semester the grantee performed much of the study design and initial field research.