Meeting the Mandate for Clean Water: An Evaluation of Privately Managed U.S. Water and Wastewater Systems

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ABSTRACT

Reliable provision of clean and safe drinking water is critical for public health, economic stability and growth in the United States. Due to a combination of financial, regulatory and operational challenges, however, it is becoming increasingly difficult for publicly owned and operated water utilities to provide affordable and safe water along with efficient service delivery. Since the 1980's, new actors have entered the U.S. water utility scene in the form of large international firms that specialize in water utility management, offering the opportunity to increase efficiency, expedite long-delayed maintenance, minimize rate increases and provide needed capital for system expansion. Private management of water and wastewater systems, however, can have unintended and negative consequences on localities, including:

- The loss of employment and pensions for the municipal utility work force;
- Higher water rates because private firms charge full cost, must pay taxes and earn a profit;
- Surrender of local control over ratemaking and other financial issues to state public utility commissions;
- Loss of municipal control of daily operations and the setting of service standards, as well as loss of control over planning for long-term growth and economic development.

The intent of this thesis is to evaluate the effects of adopting long-term operations and management contracts for water and wastewater services in three U.S. cities. The central assertion of this thesis is that such contracts between municipal governments and private water and wastewater providers are financially risky endeavors that invite labor disputes, generate municipal budget conflicts, threaten water quality and undercut the reliability of customer service.

Evidence from the three cities examined also suggests that the risks (i.e., increases in the number of violations of water quality standards, decreases in actual preventative maintenance and lower-than expected financial savings) outweigh the presumed returns offered by long-term contracts with provide providers (namely financial savings, improvements in customer service, and improvements in water quality). Finally, this study also examines the concept of competitiveness in water utility management and explores opportunities for public utilities to identify and implement operational improvements without actually privatizing any aspects of network operations and maintenance.

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CHAPTER 1. Introduction and Overview

Emerging Trends

In 1997, the United States Internal Revenue Service (IRS) issued Revenue Procedure 97-13 allowing service contracts in the water and wastewater sector to be extended to up to 20 years in length. Since then, private firms – most notably a handful of large multi-national companies – have expanded their U.S. operations, clearly indicating both their desire to actively participate in shaping the future of the water sector and their intention to claim a share of the market. Encouraged by infrastructure needs assessments projecting growth of the $60 billion water market to between $180 and $200 billion by 2019, coupled with data pointing to a nearly 10 percent increase in drinking water fees between 1996 and 2001, these companies concluded that their future share of the American water market could be extremely profitable.[1]

Prior to 1997, contracts for the operation and maintenance of public water and wastewater systems were limited to five years (with a no-penalty termination after three). These contracts were re-procured every three to five years and while many saw this limitation as advantageous in that it helped keep vendors "honest" and maintained continuous pressure aimed principally at reducing costs, others thought that the relatively unpredictable length of these contracts kept major private companies out of the market. Contracts of this nature typically included private responsibility for day-to-day O&M (operations and maintenance) while the government retained ownership and maintained control over rates. These service contracts were generally limited to small water and wastewater systems (those

[1] The International Consortium of Investigative Journalists. *The Water Barons* (Washington, D.C.: Public Integrity Books, 2003), 118.

serving fewer than 30,000 customers). In a few cases in the early 1990's, private firms purchased the capital assets of publicly owned water and wastewater treatment works. This trend has not continued for two general reasons. Principally, few municipalities were able to bolster enough public support to wholly divest their capital assets. Second, in the few transactions that did occur, many buyers felt they had overpaid for the assets based on inflated valuations, thus inheriting comprehensive networks of buried infrastructure in need of considerable repair or costly replacement.[2] Such sales typically involved that of smaller water systems to existing, neighboring investor-owned water utilities that offered economies of scale and more sophisticated management. For example, in 1995, United Water Resources acquired two small New Jersey systems to gain approximately 40,000 new customers, Consumers Water Company purchased three local Connecticut systems, and the Philadelphia Suburban Corporation acquired eight systems to add over 17,000 new customers. In the wastewater industry, the first sale of a federally subsidized municipal wastewater facility, the Franklin Area Wastewater Plant in southwestern Ohio was completed in 1995.

The sustained benefit of public ownership of water assets in the United States is the availability of governments to fund capital improvements with 100 percent debt financing. Investors in the large and highly liquid U.S. municipal bond market are exempt from federal and state income taxes on interest earnings, which substantially lowers the interest rate governments pay for borrowed capital, as long as they retain full ownership control of the asset being financed. Private purchasers do not enjoy the same tax exempt status, and many often feel that future capital outlays will either

[2] Cairo, Patrick; Executive Vice President of Suez North America/United Water, telephone interview, December 21, 2004.

be too significant or unpredictable, or both.

The 1997 change in the U.S. tax code had three immediate and significant impacts on the water and wastewater sectors. Principally, it rearranged the economic topography of the private sector, enabling larger multi-national companies to acquire smaller, U.S.-based firms that were the prominent private actors in the sector in the 1980's and early 1990's. Predicting they could not compete with large companies on price and scale in large long-term contracts, and with few significant technological advantages (e.g. patented treatment technologies or asset management software), firms such as U.S. Filter, American Water, and EarthTech, quickly became operating divisions of three major international companies – Veolia Environment, Suez Environment, and RWE/Thames.[3] According to the March 1999 issue of *Public Works Financing*, "the sleepy North American water industry changed almost overnight, and entered into a big-stakes game dominated by global service companies with billions to spend on acquisitions."[4]

The IRS amendment also created new avenues for these firms to offer comprehensive services to larger cities with bigger networks. Once weary of the time and cost involved in bidding, reviewing and contracting for only three years of service, larger cities tended to limit their partnerships with private providers for isolated and specific tasks such as off-site laboratory testing, meter reading or biosolids disposal. In principle, 20-year partnerships presented new opportunities to

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[3] Veolia Environment is listed as 463 on the Fortune 500. It operates with a net income of $2.58 billion and net revenue of $35.96 billion. Water services comprise 40% of global sales. Suez Environment is number 99 on the Fortune 500, with a net income of $2.1 Billion and total revenue of $41.9 Billion. $15.23 billion in revenue is generated from water global services. RWE is number 53 on the Fortune 500. In 2002 RWE posted sales of €46.6 billion ($59.4 billion) The corporate-wide net income was €1.05 billion ($1.34 billion) Total water sales in that year accounted for €2.85 billion ($3.6 billion).

[4] "Vivendi's Big Splash - $8.2 Billion for U.S. Filter." Public Works Financing 127 (1999): 1.

city managers or mayors facing budget shortfalls, population changes and increasing costs of federal and state regulatory compliance.

Finally, the IRS amendment amounted to a first-round victory for two major stakeholders in the U.S. water sector who had been aggressively lobbying for this change: the U.S. Conference of Mayors, a nonpartisan organization of cities with populations of more than 30,000, and the National Association of Water Companies, a Washington, D.C.-based industry group. Prior to 1997, cities stood to lose their tax-exempt status if they contracted with private companies (for any service) for more than five years. Tax status is crucial to city finances because it allows them to borrow money at significantly lower rates and offers tax-free interest payments on government bonds. Before 1997, private companies claimed they found it difficult to recover costs with contracts limited to five years.[5]

Competition and Private Sector Growth

The strength of private sector involvement in the water sector following the 1997 IRS amendment has since triggered a complex reexamination of the debate over private provision and management of public goods and services. Chapter 2 provides a detailed examination of the debate over this issue. The effort to shift responsibility for publicly owned water systems to the private sector has resulted in a protracted conflict between leaders of various stakeholder groups within the industry. (This conflict predates 1997 and goes back to the earliest view of government as an adversary of business.)[6] In the United States, government is historically seen as the

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[5] The International Consortium of Investigative Journalists. *The Water Barons* (Washington, D.C.: Public Integrity Books, 2003), 120.

[6] Herbert, Robert E, "A Comparison of Values Applied to Goal Setting Within the Public and Private Sector Water Service Industries" (Santa Ana: California Coast University Press, 2003), 17.

protector of the people against a capitalist entrepreneur; represented in the late 19th Century by William Vanderbilt who stated, "The public be damned, I'm working for my stockholders."

The economics of both the modern water and wastewater sectors complicate Mr. Vanderbilt's statement. Water and wastewater are natural monopolies that do not "compete" in the marketplace in the usual way. Customers served by enormously capital-intensive networks of underground pipes connected to facilities with large economies of scale (e.g. dams and reservoirs, water and wastewater treatment plants) cannot switch from an inefficient or low quality service provider to a more efficient or lower cost one. Today, however, many consumers are demanding that regulated monopolies act more like market competitors and that governments promote such behavior. Private entrepreneurs, consequently, are constantly searching for ways – which include operations and management contracts – to introduce competition and reduce prices to consumers.

It is not surprising that such innovation, including price benefits to consumers, has emerged in the long distance telecommunications industry and are beginning to appear in local telecommunications, electricity and gas distribution. The pressures for competitiveness in the water and wastewater industries can be viewed as a natural extension of these recent trends towards deregulation and competitiveness in the electricity, gas and telecommunications industries across the United States. The especially large demands that water requirements make on institutions, infrastructure and other natural resources will continue to challenge stakeholders – both public and private – to sort out what they mean by competitiveness and efficiency in service delivery. Surveys have indicated that customers are often willing to pay more for high quality water and reliable service, and water bonds

usually pass at elections, indicating the public's willingness to pay for high-quality services.[7] Public service in general is increasingly being challenged by demands for lower cost and higher performance. This trend is carrying a very basic reassessment of what we expect by way of public service provision, as well as a focus on possible reengineering of key services.

In the decade since the new IRS procedure was drafted, however, the market for long-term contracting for water and wastewater utility operations and management has grown only by about 3 percent per year, far short of the predicted 25 percent per year.[8] This slow growth may be attributed to a number of factors including the difficulty of matching a willing company with a realistic opportunity in a setting that includes a political authority and a public sector manager who accept entrepreneurial approach to public service provision. Difficulties in developing public-private partnerships also stem from the fact that governments have a history of providing utility service as a purely public operation, involving public employees. While some speculate that a decade of "infancy" will yield ten years of accelerated growth, this too is not certain.

It is more likely that this slow growth can be attributed primarily to an ingrained bias among public sector managers (e.g. mayors, city managers and utility operators) against the involvement of private interests because the two are fundamentally incompatible. Moreover, it is unlikely that this bias will shift in the near future. Public sector managers – backed by public interest groups, labor unions and environmental advocates – feel that the risks (to public health and safety, economic

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[7] See, for example: " 1993 and 1998 Water Utility Customer Attitudes Study" conducted by the American Water Works Association Research Foundation (http://www.awwarf.org).
[8] "Outsourcing Fee's Hit 1.9 Billion in 2003, Modest 3% Gain Begets Slow Uptick." Public Works Financing 181 (2004): 1.

stability and their own political agendas) associated with private management and provision of water resources significantly outweigh the potential benefits to consumers. Also, the principal-agent dilemma that arises in the context of municipal "privatization" creates a serious obstacle, as the economics of managing for shareholder value (the underlying mission of the private sector) make it difficult – or not sufficiently profitable – to also manage for the "greater good" at the same time.

The principal-agent problem in government contracting for private service provision arises at three levels. The public, as the principal, has to control its agents, the elected officials, but the public has no common objective, does not speak with one voice, and is hardly ever able to communicate its diverse wishes effectively. Second, public officials, acting as principals, must exercise control over their agent, the bureaucracy, a task more difficult than in the private sector because of civil-service protection in the public sector. Finally, government (as principal) must control its agent (the contractor) to pursue the organization's goals at minimum cost, to reduce risk, and to encourage innovation and efficiency. Coupled with the fact that recourse for and rectification of private-sector malfeasance is difficult when operations and management contracts extend past the three-year mark, most public-sector decision makers in large cities will, as a result, likely choose to keep their operation and management services "in-house."

The following chapters provide a detailed analysis as to why, specifically, comprehensive O&M contracts are an inadequate substitute for sustained public management of water resources.[9] The intent of the thesis is also to answer the following three interlinked questions:

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[9] The working definition of "comprehensive O&M contracts" that I use throughout this thesis refers to contracts between municipal governments and private companies that authorize a private

1. Why has the reaction to proposed public-private partnerships for water and wastewater systems management in major American cities been so much more negative than the industry expected?"

2. What should city officials and private companies involved in public-private partnerships thus far learn from the experience to date about when and how to structure such partnerships more effectively?

3. Do the benefits offered by private sector companies – stable rates, improved water quality (e.g. treated effluent) or more efficient customer service – actually accrue to consumers, or does engaging the private sector increase the risks of violating local or national regulatory standards at the expense of a community or watershed?

Three case studies, supplemented by an examination of the "state of the U.S. water and wastewater sectors," and an analysis of general trends in water and wastewater management frame these questions.

Research Justification, Parameters and Methodology

Urban water management in the United States is an issue gaining importance at local and national levels as city managers respond to budget cuts, and environmentalists contemplate stewardship and resource management in the face of population and economic growth. While it is impossible to draw perfect comparisons between any two water and wastewater systems or any two cities, the selection of these three cities and their respective systems was not wholly arbitrary. Principally, these cases were chosen because their water and wastewater systems serve at least one million consumers, making them some of the largest systems in the United States. Each city has, in the last thirty years, experienced considerable population pressure and – by extension – economic growth. Their respective water and wastewater systems have had to "keep pace" with this growth, while their public

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company to manage, operate and maintain a water or wastewater system for a specified period of time, while the municipality retains ownership of the related capital assets. This arrangement will also be referred to as a "public-private partnership," "PPP" or "privatization" throughout the thesis.

managers have had to respond, albeit in different forms, to corresponding political pressures. Each presents a different approach to responding to private sector pressures regarding water use and management.

Second, elements of each case highlight the imbalances – financial, social, and economic – that arise as a result of public-private partnerships. Atlanta and Indianapolis each prove that "publishable" financial benefits actually come at significant social and environmental costs to these cities. Houston, by contrast, proves that measurable gains can be made without the sacrifices and constraints imposed on either Atlanta or Indianapolis. Finally, it is important to note that each system, and the municipality that it serves, operates with the same explicit mission. Indeed, authorities in the public and private sectors unanimously agree on four urban service goals: efficiency, effectiveness, equity and responsiveness.

- **Efficiency** involves maximizing output from a given amount of input or resources. Efficiency is a process-oriented concept that assesses how inputs are converted into outputs; it says nothing about the degree to which goals are achieved or about citizen reaction to the service being provided.

- **Effectiveness**, in contrast, is concerned with objectives; it reflects the extent to which goals are being met. It is a result-oriented concept focusing on how nearly the wanted outcome is being fulfilled without regard for the cost involved or resources used.

- **Equity** is comprised of equal opportunity and *market equity*, in which citizens receive services roughly proportional to the amount of taxes they pay and *equal results*, in which an agency allocates its resources so that people are in an equal condition after the money is spent. Unquestionably the equity standard people adopt plays a crucial role in their judgment of agency performance.

- **Responsiveness**, the fourth issue in service delivery, concerns the degree to which citizens' preferences and demands are met.[10]

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[10] England, Robert E. and Morgan, David R. *Managing Urban America.* (New York: Chatham House Publishers, 1999), 25.

The values that the public and private and private sectors apply to these service goals are therefore examined in each case study as well.

Overview of Cases

Case 1: Atlanta, Georgia

The first case study examines a public-private partnership between the city of Atlanta, Georgia and United Water Inc., the U.S. subsidiary of the French conglomerate Suez Environment. In 1998, the City of Atlanta signed a 20-year, $428 million contract with United Water. At the time this was the largest public-private partnership agreement for water and wastewater services in the United States. The signing was celebrated by water companies declaring the contract tangible evidence of a "new era in water systems management" in the United States. On Friday, January 24, 2003 the city terminated its relationship with United Water Inc., opting instead to retake control of its vast water and wastewater network generally deemed in need of large capital expenditure to compensate for years of deferred maintenance and to meet system expansion needs. This case study examines the circumstances surrounding the decision to contract services to United Water Inc., the political and environmental climate in which United Water Inc. tried to operate during its short tenure, and ultimately, the factors that led to the city's decision to cancel the contract and retake control of its water and wastewater network.

Case 2: Indianapolis, Indiana

The second case study examines two public-private partnerships in Indianapolis with different vendors – United Water and Veolia Water NA – for wastewater management and water provision, respectively. Among private sector providers, both contracts are touted as "successes" and offered as significant proof

that public-private partnerships can contribute to water quality improvements, financial savings and operational efficiency unobtainable under public management. As with Atlanta, these cases examine the circumstances surrounding the decision to contract services with both United Water Inc. and Veolia Water NA, as well as the political and environmental climate in which both firms operate.

In January 1994 – prior to the IRS amendment – Indianapolis and the White River Partnership (United Water, JMM Operational Services Inc. and IWC Resources Corp.) entered into a five-year contract for the operation and maintenance of the city's two advanced wastewater treatment (AWT) facilities. The $14 million annual contract, then the largest involving wastewater operation, covers personnel management, routine maintenance and daily operational costs. In 1997, the contract was extended for ten years, and will be re-bid at the end of 2007. One striking characteristic about the contract is that by many measures, the two Indianapolis AWT facilities were amongst the best performing and best managed public facilities in the United States.

In 2002, building on a string of municipal public-private partnerships and privatizations (including the wastewater system as well as the city's parks and airport), Indianapolis and Veolia Water NA entered to a 20-year $1.5 billion partnership for the city's water system. The agreement calls for Veolia to manage all operations, maintenance and customer service facets of the city's waterworks. Additionally, the company will oversee more that $400 million in capital improvements. This move by the nation's twelfth-largest city marked the largest water partnership in the United States and set an industry standard by directly linking contract performance to compensation.

Case Three: Houston, TX

Finally, an examination of Houston, Texas' water system demonstrates how the practices of public reengineering and managed competition can serve as a viable alternative to public-private partnerships. Houston grew rapidly in the 1970's to a population of 1.7 million, making it the fourth largest city in America. The expansion of the water and wastewater systems grew through annexation and patchwork expansion. In the early 1980's, the city began to invest in the construction of new water and wastewater treatment facilities. In 1995, city leaders were approached by a private operations company with an offer to operate and maintain the water system at a reduced cost.

In 1996, the city initiated a managed competition program, soliciting competitive bids for pre-qualified firms. In addition to the bidders, city of Houston employees participated in the competitive sealed bid process. The city's bid – while not the lowest in price – was chosen in large part because city leaders recognized that it was already managing an efficient operation. Choosing a private operator was, in their opinion, *not* in the city's best interest.

CHAPTER 2. The Debatable Merits of Public-Private Partnerships

Historical Context

In the evaluation of the contemporary debate over the degree to which private operators can or should be involved in the provision and management of water and wastewater services, a brief review of the historical context from which this debate slowly grew is relevant. Private sector involvement in water supply and wastewater management dates to 1805, with the creation of the Baltimore Water Company – the first private water provider formed at the bequest of municipal authorities who were unable to meet the water needs of the city's 30,000.[11] As American towns and cities continued to grow throughout the century, concern for public health – underpinned by the need for adequate drinking water supplies and safe wastewater disposal – became a paramount government priority. The complexity of ensuring that these needs were met, coupled with the associated costs of doing so, slowly drove both the consolidation of private water and sewer networks and movement back towards public ownership and management.

Today's multi-national companies point to the history of private-sector involvement as evidence of a general public acceptance of alternatives to government provision and management of critical natural resources. As proof of their value, private operators and their advocates tend also to remind consumers and public officials of the pressures associated with municipal service provision and the complexities of government that did not exist at the turn of the century. These firms generally offer the following as "value-added" in modern municipal partnerships:

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[11] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 31.

- Cost savings;
- Increased accountability, compliance and performance; and
- Added community benefits;

The current debate regarding public and private provision and management of water resources has produced considerable literature in both support of and opposition to an increased role of the private sector in this capacity. This chapter evaluates the role of savings, incentives and risk allocation in structuring municipal partnerships in an effort to determine the degree to which the aforementioned "benefits" of private-sector participation actually accrue to municipalities.

Costs and Benefits of PPP's: Social, Environmental and Financial

Improvements in regulatory compliance *should* be the principle reason for the public sector to seek private-sector assistance. Yet an examination of proposed, active or completed partnerships with larger systems (serving 50,000 or more) in the last decade – including Indianapolis, IN; New Orleans, LA; Stockton, CA; Jersey City, NJ; and Atlanta, GA – show that only one (Atlanta) had a history of serious and repeated regulatory infractions of both the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA).[12] A comprehensive study of SDWA violations between 1997-2003, conducted by the Brookings Institute concludes, moreover, that the least-frequent SDWA and CWA violations occur in large public systems serving 100,000 customers or more.[13] Absent the need to rectify regulatory infractions and therefore reduce the risks to environmental or public heath, it can be concluded that

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[12] See, for example: Federal Consent Decree, Civil Action File No. 1:95-CV-2550-TWT. Upper Chattahoochee Riverkeeper Fund, Inc; The Chattahoochee Riverkeeper Inc; and W. Robert Hancock, Jr. v. The City of Atlanta *and* The United State of America v. The City of Atlanta, filed October 10, 1995.

[13] Kosec, Katrina and Wallsten, Scott, "Public or Private Drinking Water? The Effects of Ownership and Benchmark Competition on U.S. Water System Regulatroy Compliance and Household Water Expenditures," (Washington: AEI-Brookings Joint Center for Regulatory Studies, 2005), 10.

large cities seek partnerships principally to effect municipal savings that can either be reinvested in specific components of the water and wastewater systems or be allocated to other municipal functions such as public safety (police and fire) or solid waste removal or used to bolster a city's general enterprise fund.

But because there are few economies of scale to be gained from the water delivery infrastructure, contract operations can only offer potential advantages by generating cost savings in three components of water supply: labor efficiency, centralization of financial and operating services, and improvements in the management and yield of the basic water supply and non-distribution assets. Private operations and management contracts for water services may thus effect significant and lasting changes in local employment and supply acquisition, as well as in land and recreational assets related to basic water supply. Thus no debate about public or private provision and management is therefore complete without an examination of the broader and longer-term risks with respect to community values, environmental protection and long-term water supply, and even regional economic development.

Savings are a watchword for municipal managers, and water systems are one of the costliest items on a municipal budget. While a current "state of the U.S. water sector" is examined more closely in Chapter 6, it is worth noting here that capital costs for major systems are indeed large. For example, just for the replacement of water mains and other distribution system infrastructure, the American Water Works Association (AWWA) estimates required spending of $325 billion over the next 20

years.[14] Similarly, in the wastewater sector, EPA estimates that to meet requirements under the Clean Water Act, required infrastructure spending will be a minimum of $146 billion over the next 20 years. A comparative study between industries also concludes that $10 to $12 of capital investment is required for each dollar of revenue generated in the water industry compared to just $3 to $4 of revenue for electric utilities and $3 for telephone companies.

Table 2.1. Capital Intensity for Major Utilities (Figures in $ billions)

	Electric Utilities (1998)	Natural Gas Utilities (1996)	Telecommunications Companies (1999)	Water Utilities (1998)
Operating Revenues	217.8	62.6	113.2	2.8
Operating Expenses	186.1	59.4	93.1	2.2
Net utility Plant	328.2	77.7	165.8	10.1
Ration of Operating Expenses to Operating Revenues	0.85	0.95	0.82	0.76
Ratio of Utility Plant to Revenue	1.51	1.24	1.46	3.52

Sources: See National Research Council "Privatization of Water Services in the United States," from: DOE (1998); FCC (1999); NAWC (1998); U.S. Department of Commerce (1999)

How big are the savings that any municipality or utility might expect under private management? Once calculated, the question of whether or not these savings are actually "worth it" remains. While difficult to gauge, the concept of a "competitiveness margin" provides one perspective on both question. Based on more than 100 water and wastewater utilities examined between 1995 and 2000, one firm reports that service delivery by public water and wastewater utilities is, on average, 24 percent more expensive than comparable private services.[15] This margin isolates the controllable operations and maintenance budgets of public

[14] American Water Works Association, "Testimony on Aging Water Infrastructure before the Subcommittee of Water Resources and the Environment, Committee on Transportation and Infrastructure, US House of Representatives," April 28, 2004.
[15] Association of Metropolitan Sewerage Agencies (AMSA), *Thinking, Getting, Staying Competitive: A Public Sector Handbook,* (Washington: AMSA Internal Press, 1999), 3.

utilities and compares them to benchmark costs associated with operations of two large French water and wastewater utilities. Evidence from two California water utilities (public and investor-owned, respectively) further demonstrates the result; in all categories but one, government-owned operations are nearly double those of the privately owned and operated utility. While investor owned utilities are wholly private (e.g. owned and operated by private firms, and regulated by an independent regulator), private firms with O&M interests tend to argue that they can replicate the numbers presented by investor owned utilities without forcing a municipality to sacrifice ownership.

Table 2.2. Selected Operating Expenses from California "Investor Owned" and Government Water Agencies

	Investor Owned	Government Owned
Total operating expenses per connection	$273	$330
Employees per connection	1.62	3.49
Salaries as a percent of operating revenue	13.40	37.13
Maintenance as a percent of operating revenue	5.29%	9.13%

Source: www.privatization.org/Reason Public Policy Foundation (http://www.privatization.org/database/policyissues/water_local.html#2)

The inherent problem with the statistics provided in the example above is that each case isolates only those "benefits" that are quantifiable and discount both the social costs and benefits – such as the larger implications of a reduced workforce on a community or the long-term effects of decreased maintenance on a water system – that are either difficult or altogether impossible to quantify. Further, the example above provides no comparison between the size, age or condition of the two compared utilities. Thus, while nationwide saving 24 percent of all water and wastewater operations and management costs *could* reduce local expenditures by nearly $5 billion a year, adaptation of "best management practices" as demonstrated

by the private sector must somehow also account for the non-quantifiable effects. The advantage that private operators demonstrate in making a case for sustained private involvement in the water sector – either through long-term O&M contracts or asset ownership – is that very little comprehensive benchmarking exists between utilities in these sectors. The decentralized state of the industry, coupled with localized conditions (e.g., workforce and strength of labor unions, age and location of a system) make it difficult to compare costs across operational sectors. To their advantage, private firms operating "good" systems (e.g. those in good condition when they inherited the utility or system) might unfairly suggest that "best management practices" could be applied to a "bad" system and achieve comparable results. Examined carefully, these are misrepresentative statistics. Private firms tend to publish such comparisons in order to persuade public-sector managers into relinquishing control over their system's management. The absence of industry benchmarks only makes this type of argument more persuasive; city managers and utility operators are forced to make best-guess estimates more often than informed decisions about the true future needs for their cities or systems.

Private sector advocates also argue that while government has a duty to ensure that citizens receive certain services, the responsibility does not necessarily dictate that government must provide these services itself, and therefore government and those they serve stand to benefit as competition drives private firms to constantly seek new ways to reduce costs and improve services. In support of this argument, these groups cite studies such as that of 250 water and wastewater utilities conducted by the BTI Consulting Group, which found that private, investor owned water utilities operate at significantly higher levels of efficiency than public sector water utilities. Specifically, the study concluded that only about 6 percent of

all municipal utilities had delivered a return on assets of 5.35 percent, or twice the average return of 2.48 percent and concluded that municipal utilities could save $25 billion per year if they *at least* adopted best management practices of privately owned systems.[16]

Despite the pressures exerted by private water providers, public utilities must nevertheless be cognizant of the fact that not every municipality should narrow the entire cost-margin that may exist. Publicly owned and operated water and wastewater utilities serve communities in ways that go beyond direct delivery of drinking water or wastewater treatment. Typically, water or wastewater utilities offer enhanced or convenience services such as:

- Water conservation education and program implementation;
- Watershed planning and protection;
- Protection against sewer backups, fires, and explosions through the industrial pretreatment program;
- Technical assistance (to industrial customers) on wastewater treatment and waste minimization;
- Ambient surface and ground water quality and sediment monitoring;
- Provision of reclaimed water supplies and groundwater recharge; and
- Septic tank retrofitting and septic pumping and disposal.[17]

Other examples include wide safety margins resulting in cleaner effluent than required under permit (such as choosing an ozone treatment processes over a chlorination process), maintenance of reserve capacity to accommodate industrial growth, and cooperation with other city services. Narrowing a cost or competitiveness margin can mean stripping a utility or set of utilities to their core functions (providing treated drinking water and treating wastewater), thereby

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[16] "The Right Price for Water." Public Works Financing 127 (1999): 17.
[17] Association of Metropolitan Sewerage Agencies (AMSA). *Thinking, Getting, Staying Competitive: A Public Sector Handbook,* (Washington: AMSA Internal Press, 1999), 1.

undermining the difficult to quantify indirect social or environmental benefits of a larger public utility.

In many public water agencies, some degree of cost efficiency in water service delivery *is* therefore sacrificed in the interest of achieving other community values such as equity or provision of water that exceeds quality standards. Maintaining a local public works department might also provide a mechanism to preserve local jobs and, in some jurisdictions, serve as a means of preserving opportunities for political patronage.[18] A related economic issue is whether supplies and equipment are purchased locally. Unless specified in contracts, large companies can generate savings for municipalities by using out-of-town or out-of-state call centers and procurement to reduce costs. In Jerry Wurf's (former AFSCME National President) opinion,

> Contracting out public services and public service jobs has become a new form of political patronage subject to fantastic rip-offs, corruption, bribery and kickbacks. When it comes to working for the public – whether serving food to school children or hauling garbage – private business firms have one goal, profit, not service. As long as public officials are allowed to hand out jobs to their political pals, contracting out will remain a politician's dream and a taxpayer's nightmare.[19]

While Mr. Wurf's point may be exaggerated for the sake of his constituents, it is not without merit. Contracting out water service provision is more complicated that food service or garbage collection – simply put, the stakes are considerably higher as are the implications poor performance. Imagining the worst-case scenarios of poor service provision in the aforementioned two industries is indeed troubling – but nowhere near that of the water sector. This is not to suggest that public sector retains an inherent advantage on "good" management – of water resources or

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[18] Fantauzzo, Steven; Regional Director of the American Federation of State, County and Municipal Employees, Indianapolis, telephone interview, March 1, 2005.
[19] Wesemann, H. Edward. *Contracting for City Services* (Pittsburgh: Innovations Press, 1981), 59.

garbage delivery. Publicly owned and operated water systems have, as will be demonstrated in later chapters, faced their share of performance-related problems. The real issue is one of process. In getting to an awarded contract with a private service provider – "kickbacks" and "rip-offs" may indeed be part of the process. Contracting for water service provision also often involves the fire-sale of ancillary assets – trucks equipped for snow removal, computer equipment – to be replaced from the winning-bidders fleet or equipment. Yet should the chosen provider's contract be terminated, or even readjusted to reflect unexpected costs, a municipality might find itself without the required equipment or tools to retake control or continue adequate service provision following the firm's departure.

At the award stage for long-term contracts, moreover, following the sale of related industry assets, a municipality will still be shopping for the "best deal." While the award of long-term contracts typically does not depend on lowest price but on "best-value" (i.e. a combination of an operators successful history in the sector, financial strength, technical expertise and price), evidence actually suggests that most long-term concession contracts tend to be awarded on lowest life-cycle cost basis.[20] According to Paul Eisenhardt, a specialist in structuring such transactions, a "low-bid approach in such a capital-intense industry will have extremely detrimental short and long-term implications for both the operator and municipality."[21] A lowest-cost bid can undermine the long-term objectives of a contract because the operator, at some point, will need to find avenues through which it can both recover its costs and provide the needed return on investment (ROI) to meet corporate expectations.

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[20] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 64.
[21] Eisenhardt, Paul; President and CEO, The Eisenhardt Group; telephone interview, February 14, 2005.

Any savings promised to the municipality might therefore equally diminished, as a "low-bid" contractor is likely to submit change orders for cost overruns, engage the public authorities in contract renegotiations just a few years into the original contract, or advocate for rate increases to consumers as soon as possible.

One specific example of such behavior is demonstrated in the responsibility for repairs or replacement of equipment. Generally, concession agreement dictate that the responsibility for replacement or repair for assets under $10,000 belongs to the private partner, while any investment exceeding $10,000 belongs to the public partner.[22] A justification for this standard is that it promotes best-practices in preventative maintenance.[23] Clearly, there is little incentive for the private operator to invest capital it cannot recover, as it is generally operating in an environment of razor-thin profits. Moreover, these firms do not often have the manpower to oversee and implement aggressive preventative maintenance practices. As a result, a private operator will often bundle repair or replacement costs of small items together, in order to circumvent the $10,000 threshold for investment.[24] While a single $10,000 repair is negligible for a contractor, water and wastewater systems are literally comprised of millions of intricate working components. The net impact of $10,000 outlays can therefore be significant.

Risk and Scale: Does Operational Scale Undermine Proper Risk Allocation?

Local governments can ill afford to enter into agreements with private sector service providers without a careful analysis of risks and a clear delineation of risk-

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[22] See, for example: Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998.
[23] The Water Partnership Council. *Establishing Public-Private Partnerships for Water and Wastewater Systems: A Blueprint for Success* (Washington: Water Partnership Council, 2003), 70.
[24] Rubin, Kenneth PhD; President and CEO, PA Government Services Inc; in-person interview, January 24, 2005, Washington, DC.

management methods. According to EPA, "public-private partnerships should be designed to allocate risks among the parties in proportion to their abilities to bear risks, and to control factors associated with those risks."[25] Risks include the challenges associated with meeting water quality standards, potential litigation action by the public, increasing amounts of damage awards, and a low public tolerance for service interruptions, even during natural disasters. The first line of defense for balancing risk between partners is a relationship of trust. Contract terms and conditions based on realistic assessment of risks provide added protection for both parties, although risk – by definition – cannot always be anticipated. The following matrix provides an example of how risk might best be allocated across parties in a long-term operations and management contract.

Table 2.3. Sample Risk Matrix

RISKS	**RESPONSIBILITIES**		
	Private Partner	*Public Partner*	*Shared*
As-is condition of plant	X		
Non-performance	X		
Deterioration of asset value	X		
Costs in excess of budget	X		
Non-compliance with environmental regulations	X		
Quality and quantity of influent		X	
Owner-mandated change orders		X	
"Uncontrollables"		X	
System repairs and replacements			X
Indemnification			X

Source: The Water Partnership Council (www.waterpartnership.org)

The greatest imbalances in public-private partnerships generally arise in the absence of proper risk definition and allocation. In "poor" PPP transactions, both the public and private sectors can be at fault for improperly managing or assigning these risks. First, in preparing tender documentation, the public sector initially allocates

[25] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 49.

the various risks between the public and private sectors. The tendency during the process of preparing tender documents may be for the public sector to push a wide rage of risks over to the private sector. Part of this tendency can be explained by the fact that the other side of the arrangement (the private sector) is not present when the initial tender documents are being prepared and thus is not able to present reasons why certain risks should not be transferred along with the technical and commercial responsibilities being delegated. Part of this tendency can also be explained by the fact that a major objective or reason why a partnership is being pursued by the public sector is to transfer risk to the private sector. The public sector should, perhaps, acknowledge these and other tendencies regarding risk allocation but should also recognize that it is in its interest to strive, in spite of these tendencies, for a reasonable allocation of risk. In the context of risk allocation, "reasonable" can be defined in terms of two basic rules:

1. What party is in the best position to manage the risk?
2. What party is in the best position to absorb the risk?

Managing the risk runs the full gamut from identification to avoidance to mitigation to transfer. Using this first rule is how most risks should be allocated. It leads to the most efficient and lowest cost method of dealing with risk in a partnership and is therefore reasonable.[26]

If the private sector initially chooses to accept risks that ultimately undermine profit, however, over the long term it may either aim to alleviate the burden of these risks by (re)negotiating them away, or accepting them only with the return of increased compensation for doing so. A return to the examination of preventative

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[26] Gallagher, Patrick, "Private Sector Participation: Some Guidelines for Future Arrangements." Paper presented at the 13th Caribbean Water and Wastewater Association Conference and Exhibition, 4-8 October, 2004 on behalf of Camp, Dresser and McKee.

maintenance again elucidates this dilemma. PPP contracts generally call for the private sector to return the assets to the public partner at the end of a contract in the same, or better, state than received at the contracts inception.[27] Unless the public and private partners agree at the outset of a partnership on the specific conditions of a system's infrastructure, or on the upper-bound quality of treated effluent, the private partner may have great latitude over the course of a contract to make decisions about preventative maintenance or treatment technologies that actually increase risk to the public, while decreasing risk –and cost – to the contractor. Short of regulatory infractions, the latitude that a private provider may have in making decisions regarding preventative maintenance or appropriate treatment technologies means that those risks that appeared to be balanced at the outset of a contract – or wholly assigned to the private provider – are actually retained (and heightened) by the public sector.

Scale can also "blur" the appropriate allocation of risk. That is, the scale at which private water providers operate is simply unmatched by a single municipality. Whereas a large city such as Indianapolis, Atlanta or Houston may operate and manage up to five water or wastewater plants, a multi-national company has, at any time, thousands of plants in its portfolio servicing millions of customers worldwide. Not only does this give the firm a tremendous economic advantage in terms of bulk purchasing and regionalized customer service and billing, as long as long as the O&M period is long enough, the "1,000 plant portfolio experience" provides the private operator with countless opportunities to take risks that a municipality cannot

[27] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998; Section I: Terms and Conditions.

afford to take.[28] The risks and negative consequence of this approach – to health, the environment and local economies – should not be understated.

Scale affords a private operator the luxury of manipulating local labor unions, "strong-arming" municipalities into service agreements that render termination for convenience and termination for non-compliance clauses nearly toothless. While the result of poor performance or non-compliance in one particular municipality may be contract termination, it takes tremendous or repeated malfeasance to lose aggregate market share given the limited number of competitive private firms. The emergence of multi-national companies into the U.S. water market ultimately has as much to do with actual experience in meeting federal and state environmental and health regulations as it does, more generally, with operational scale. As indicated in Chapter 1, the 1997 IRS amendment afforded these firms a first glance into the potentially lucrative, and relatively untapped, municipal water market. Noting an infrastructure financing gap in the billions of dollars (see Chapter 6), and realizing the limits of true competition in the sector because of the characteristics of water service in general (and the composition of global water service providers, specifically) the 1997 IRS amendment allowed these firms to simply "buy" their way into the US water market. That is, a single long-term contract for O&M services, even in the most controlled and transparent political environment, is not an excessively profitable endeavor for a private operator.

Controlling costs, meeting stringent health and environmental requirements and managing uncertainty in a business where much of the infrastructure is buried and user fees are historically low supports this fact. By contrast, however, the

[28] Garvin, Michael; Assistant Professor, Dept. of Civil Engineering & Engineering Mechanics, Colombia University, interview via email, March 8, 2005.

private sector stands to gain tremendously through multiple long-term municipal O&M contracts, and through other types of arrangements, such as design-build-operate (DBO) contracts. Buying into the O&M market – at a potential loss – provides opportunity for a multi-national to sell additional engineering and management services, either at the same facility or in a new location.

Summary

Management agreements set the tone for everything to do with a long-term operations and management of a water or wastewater system. Experience in the U.S. water and wastewater sectors suggest, however, that it is not yet possible to structure the kind of bulletproof transaction common among more conventional asset securitizations, such as in the transportation or telecommunications sectors (see Chapters 3 and 4 for an expansion of this). With aligned visions, private sector providers and pro-privatization city managers might see "profit" and "savings" for the near term, and together discount the sustained effects of a twenty-year engagement. The ultimate measure of the success of the public–private partnership rests in how well the private sector water companies can create partnership offers that achieve the goals and objectives established by their public sector peers. To do so, however, public sector officials – mayors, city managers and even senior utility staff – must look beyond their tenure as elected officials and evaluate both the current and future needs for their cities.

The degree to which local governments embrace and or react to any change may well govern the pace at which the industry transforms. Broad societal, business and utility trends will shape the future for large water utilities. These trends include the development of new technology, increasing stringency of water quality standards, aging infrastructure, globalization of the water business, population

increases, demographic shifts, and the increasing litigiousness in the United States. Some of the trends affecting provision of water and wastewater services are not so obvious. For example, the free exchange of technological knowledge so common in the current collegial world of water may well become constrained if competitive pressures cause water utility managers to view such knowledge as a competitive advantage. Other, more discrete effects include the simplicity of advocacy group organization and mobilization in an era when electronic communication is in the hands of every water utility customer and the utility itself. The availability of water quality data on a real time basis via the internet could also fundamentally change the manner in which consumers are made aware of water system issues.

CHAPTER 3. Case Study: Atlanta, Georgia

Overview of the Case

This case study examines a public-private partnership between the city of Atlanta, Georgia and Suez/United Water Inc., (hereafter referred to as "United Water" or "the company") the U.S. subsidiary of the French conglomerate Suez Environment. In 1998, the city of Atlanta signed a 20-year, $428 million contract with United Water for the operation and management of the city's water and wastewater system. At the time this was the largest public-private partnership agreement in the United States for water and wastewater services. The signing was celebrated by water companies declaring the contract as tangible evidence of a "new era in water systems management." On Friday, January 24, 2003 Atlanta terminated its four-year relationship with United Water, opting instead to retake control of a vast water and wastewater network generally deemed in need of large capital expenditure to compensate for years of deferred maintenance. This case study examines the circumstances surrounding the decision to contract services to United Water, the political and environmental climate in which United Water tried to operate during its short tenure, and ultimately, the factors that led to the city's decision to cancel the contract and retake control of its water and wastewater systems.

Network Overview and City Demographics

Atlanta's water and wastewater system is one of the oldest and biggest in the United States, serving over 142,000 accounts with more than 2,400 miles of pipe in the distribution system, some of which was laid in 1875. Over the last 40 years the Atlanta metropolitan area has also experienced rapid growth. In 1960 the population was a little over 1.3 million people and ballooned to over 3. 1 million in 2000 – more

than tripling in forty years.

Table 3.1. Atlanta Metropolitan and Neighboring County Population Growth, 1960-2000					
	1960	**1970**	**1980**	**1990**	**2000**
Total	1,312,474	1,761,575	2,233,324	2,959,950	3,669,300
Change	--	449,101	471,749	726,626	709,350

Source: US Census 2000 and City of Atlanta (www.atlantaga.gov)

Water users saw escalating water and sewer charges (see table 3.2 below) prior to the engagement of United Water, and faced the prospect of continued rate increases to help cover anticipated investment costs of $2.8 billion for system upgrades.

Table 3.2. Atlanta Sewer Charges 1994-2005		
Year	**Sewer Rate (per CCF, 100 cubic feet)**	**% Increase**
1994	$1.90	17.24%
1995	$1.95	14.70%
1996	$1.95	0%
1997	$2.29	17.40%
1998	$2.55	11%
1999	$2.97	16%
2000	$3.31	11%
2001	$3.40	3%
2002	$3.93	15.6%
2003	$4.45	13.2%
2004	$5.03	13%*

Source: City of Atlanta (www.atlantaga.gov)/Clean Water Atlanta (www.cleanwateratlanta.org)
* 13% represents a minimum. Following this study, rates rose in excess of 30 percent.

There was tremendous pressure and need to invest additional capital to expand the capacity and reach of the system to keep pace with this growth, as evidenced by water main breaks, system "outages" and poor color, odor and taste of the city's drinking water.[29] While the water system had its share of problems, however, they were not as dramatic as the wastewater system.

In July 1998, to settle a lawsuit brought against the city by the United States Environmental Protection Agency (USEPA), the Georgia Environmental Protection Division (EPD), the Upper Chattahoochee Riverkeeper and a citizen downstream,

[29] MacDonald, Douglas B, "The Water Bill – We Pay it: The Question is Who Writes It?" (Washington: The United States Library of Congress, 2000), as extracted from *Citizen Magazine:* A US Library of Congress Journal.

Mayor Bill Campbell signed a Federal Consent Decree committing the city of Atlanta to an accelerated program of activities designed to further improve water quality in metro Atlanta streams and the Chattahoochee and South Rivers. The Consent Decree specifically directed the city of Atlanta to develop and implement, by 2007, a solution that would end water quality violations resulting from combined sewer overflows (CSOs).

The Consent Decree was amended in May 1999 to add projects that would eliminate water quality violations from sanitary sewer overflows (SSOs). Under the first amended Consent Decree, the city will accelerate the ongoing sewer improvements, including an intensive evaluation of sewer pipe conditions; rehabilitation or replacement of defected or capacity limited sewer lines; a grease management program; and a capacity certification program for new development. Sanitary sewer related improvements are to be completed by the Consent Decree deadline of July 1, 2014.[30] Any failure to meet the payments or meet mandated water quality improvements at specified intervals results in a "stepped penalty" of daily fines ranging from $2,000 to $8,500.[31]

Pressure to Pursue a Partnership

Faced with the cost and technological burden of compliance with the lawsuit brought against the city for illegally discharging into the Chattahoochee River, Bill Campbell promptly explored the opportunity to partner with a private provider in order to defray daily fines of $20,000 from EPA and state regulators, and help with the future investment to improve the system. Atlanta's water "woes" came at an

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[30] See "Clean Water Atlanta," the City of Atlanta online (htt://www.cleanwateratlanta.org)

[31] Federal Consent Decree, Civil Action File No. 1:95-CV-2550-TWT. Upper Chattahoochee Riverkeeper Fund, Inc; The Chattahoochee Riverkeeper Inc; and W. Robert Hancock, Jr. v. The City of Atlanta *and* The United State of America v. The City of Atlanta, filed October 10, 1995; pp. 68-70.

interesting time for the city, and in difficulty Mayor Campbell also saw opportunity – for himself, his city, and even for the private sector.

In 1996, Atlanta hosted the summer Olympics, an event that elevated the city's status tremendously. The downtown revitalization undertaken in the years leading up to the Olympics took a great toll on the city budget and on the aging water infrastructure. Any financial gains Atlanta might have made from the Olympics, however, were clearly not sufficient to cover investment in new public infrastructure to support the Olympic events.[32] In 1998, two years after the Olympics, the IRS Revenue Procedure 97-13 authorizing long-term operations and management contracts in water and wastewater provision was still a new and untested opportunity for large cities and private providers alike. During this time, multi-national firms like United Water and Veolia Water NA were also aggressively marketing their services. Atlanta, the unofficial "capitol of the south," was viewed as a fantastic opportunity for a private sector water provider to demonstrate its value. If a private firm could secure a 20-year operations and management agreement under the new IRS procedure, *and* deliver the needed changes to one of the country's worst performing water systems, it seemed plausible that other large markets – including New York and Detroit (two of the nations largest systems, both in need of considerable investment) – would consider following Atlanta's lead.

Contract Details

General

United Water won the 1998 bid to operate and manage Atlanta's water and wastewater for 20 years by submitting the lowest bid of four firms and offering to

[32] At the conclusion of his tenure, Atlanta had a recorded budget deficit of $82 million. As reported in *Time Magazine*, April 25, 2005 "America's Five Best and Three Worst Mayors."

save the city more than $20 million. Speculation surrounded the procurement – including Mayor Campbell's personal and political connections to United Water – but the promise of such considerable savings coupled with a relatively respectable reputation as one of only a few global water provider quelled any real opposition, including from local labor unions, to the proposed deal. From facing an 81 percent rate increase for water and sewer in 1997, Atlanta's water users were expected to see a total of $400 million in actual cost savings over the 20-year life of the contract. At the same time, service quality was expected to improve with a $4 million investment in a new computer system and software, and through an additional $5 million in planned system upgrades. In addition, United Water guaranteed $32 million in value-added operational services and $46 million in added revenues to the city's enterprise fund.[33]

The effects of such improvements are manifested in both subtle and obvious ways. New software and information technology brings with it the opportunity to improve customer record keeping, streamline billing and collection and reduce supplier-related data errors. Stable water rates, generated through promised cost savings, appease business and residential property owners and help lure new business and residents to the city. Indeed, the promised upgrades and investment by United Water were attractive to Atlanta, as they would be to any city under similar circumstances.

Water Quality Improvements

The contract for services with United Water charges the company with making improvements in general efficiency and effectives in operations, in the quality

[33] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Section 5: Services Fees and Payment.

of the finished water product, while reducing overall costs to the city.[34] Great latitude is given to United Water in doing so, and few penalties (other than termination) were included for non-compliance and poor performance and very few performance-based guarantees were defined to encourage innovation, efficiency or quality. Rather, the contract was set as a standard fixed-fee for services contract with United Water receiving $21,400,000 annually for its services to the city.[35]

Absent performance guarantees, a contractor often has little incentive to perform services to a level or degree that generate unanticipated and non-recoverable costs born by the contractor. This is a situation not limited to contracting in the water sector, of course, but presents a difficult paradigm for any owner-operator arrangement. A private firm operating on a cost plus fixed fee basis in an environment where profits are carefully calculated over the twenty-year life of the contract will lose incentive to contribute labor or resources to a problem if the costs associated in doing so diminish, significantly, the return on the contractor's investment. This paradigm is further complicated in the water sector by the fact that private firms might already be operating at a significant loss. The business model for private contracting supports this; firms often enter into 20-year contracts having calculated losses for the first three to five years. It is only after the contract affords the operator to effect significant changes or reductions in labor, sell ancillary services or renegotiate after an appropriate level of comfort is established that it may begin to see profits. In this contract, moreover, the company was responsible for the first $10,000 in cost for any equipment or material necessary for replacement or

[34] Ibid, Section 3.12: Improvements in Standards.
[35] Ibid, Section 5.04: Adjustments to Operating Fee. Note: One exception is that at Atlanta's discretion, at the start of each billing year the O&M fee could be adjusted up or down.

repair of any of the system's components.[36] As noted in Chapter 2, an operator – without any checks and balances to dissuade such behavior – will often circumvent these charges in order to retain capital for year-end profit. Bundling capital costs in excess of $10,000 allows a contractor the opportunity to circumvent capital outlay, thereby keeping its costs "in check."

Letter of Credit and Fidelity Bond

As is customary with large operations and management contracts, United Water is required to provide the city with an irrevocable letter of credit and fidelity bond in the amount of $10,000,000 to ensure performance.[37] While the letter of credit and fidelity bond both provide leverage for the city should United Water's performance not meet the criteria set forth in the contract, neither can be viewed as "silver bullets" to keep the contractor from performing poorly.

Results of the Partnership

If politics, environmental quality and public heath could be considered the three legs that supported Mayor Campbell's decision to contract with United Water, each can also be considered as the key contributors to the undoing of the contract. The Consent Decree drove Mayor Campbell to look to the private sector to assist the city in meeting EPA's mandate for clean water. In addition to jeopardizing the heath and safety of Atlanta's citizens and its natural resources, the public relations fallout of the Consent Decree was a tremendous obstacle to the sustained economic growth of the city and burden on the Campbell administration. It is likely that his

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[36] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Article 4, Section 4.02: Capital Repairs and Replacement.

[37] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Article 10, Section 10.03: Letter of Credit.

[37] Miller, Jack; Indianapolis resident and journalist, telephone interview, December 15, 2004.

tenure would largely be evaluated on his ability to manage change in the water sector. This point underscores the fact that decisions regarding water service provision are tremendously political. For obvious reasons it is impossible to disassociate politics from the management of critical public infrastructure and resources.

In 2002, Mayor Shirley Franklin (who succeeded Bill Campbell as Mayor in late 2001) took immediate issue with, and action against United Water, whom she felt was significantly underperforming in its duties to provide basic service and necessary upgrades as agreed in the contract. Franklin cited a declining collection rate (from 98 percent to 94 percent under private management), and an unmet backlog of deferred maintenance – both contractual responsibilities of United Water – as the primary drivers of her discomfort with the city's arrangement. Even before United Water took over the system in 1999, there was speculation that the company had vastly overstated the amount of money it could save, and vastly underestimated – at least publicly – the amount of work required to operate the system.[38]

In a 2002 report prepared by an independent task force appointed by the Mayor, and in subsequent letters to senior management at United Water, the Franklin administration also cited poor decisions regarding employee management and retention as the underpinnings of United Water's inability to improve services. According to the contract the company was required to offer full-time employment to all city employees affected by the partnership immediately following the management transfer. However, the contract stipulates that United Water ultimately only be responsible for:

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[38] Koller, Frank, "No Silver Bullet, Water Privatization in Atlanta, Georgia: A Cautionary Tale," February 5, 2003. As extracted from CBC News online, "Water for Profit: How Multinationals are Taking Control of a Public Resource," http://www.cbc.ca/news/features/water/index.html.

> Retaining a sufficient number of qualified and appropriately trained personnel to (a) perform all of the Company's obligations and duties under the contract in a timely and efficient manner (b) ensure uninterrupted operation, maintenance and management of the system and (c) comply with any applicable laws regulating the number and status of employees of the system.[39]

While the contract also stipulated that during its first three years, United Water could only terminate employment through a voluntary "quit" by the affected employee or though voluntary election of early retirement or "for cause," it was relatively easy for United Water to trim staff to levels it felt appropriate to conduct business in Atlanta through periodic drug and performance testing.[40] All told, United Water more than halved the number of employees from more than 700 prior to its engagement with the city to just over 300 in a period of three years.

The paradox of public-private partnerships is that for a system as large, complex and fractured as Atlanta's, it is unlikely that a leaner workforce – even with the benefits of "in-house" knowledge and more sophisticated IT systems – could also be a more productive workforce. Prior to contracting with United Water, customers routinely complained about water main and hydrant breaks, which require servicing by dispatched crews. United Water operated under the misguided assumption that it could be more responsive to these types of problems with half the operating staff.

Water Quality

Two factors lead to Mayor Campbell's decision to hire United Water to operate and manage the city's water system, cost control and the Consent Decree for poor water quality. What should have been United Water's paramount priority – improving water quality – clearly was not and on many occasions (including twice on

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[39] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Article 13, Section 13.02: Hiring.
[40] Ibid.

September 11, 2001) the company allowed very serious water quality violations to occur. For ten hours on that particular date, the finished water leaving the city's Hemphill Water Treatment Facility had chlorine residual of 6.6 parts per million (ppm).[41] The legal limit under the Safe Drinking Water Act is 4 ppm and the contract agreement between Atlanta and United Water called for a limit of 1.1 ppm.[42] Thus, United Water exceeded the contractual limit six fold. The second violation on September 11, 2001 was a wastewater discharge from the Hemphill Plant into the sewer, constituting a dry weather overflow.[43] As isolated incidents and perhaps "one-time" events, it would be difficult for Atlanta to find sufficient justification for terminating the contract with United Water, given the continuous past infractions by the city. However, evidence of other deficiencies supplement this infraction.

In their defense, United Water representatives now suggest that on numerous occasions the company asked that city spend additional capital on replacing sections of the water system which were causing recurring taste and odor complaints and brown water, in spite of repeated localized flushing efforts by their crews. United Water also demanded that capital expenditure (CAPEX) funds be spent to replace the malfunctioning instrumentation and control system at major pumping stations which, when the pumps tripped off, would force the company to issue "boil water" notices due to low system pressures. The Atlanta Water Department in turn claimed they had no CAPEX funds allocated to them by the city since all of the CAPEX

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[41] Correspondence from Remedios K. del Rosario, Commissioner Atlanta Department of Water to DeWayne Martin, Chief Operating Officer, United Water; September 13, 2003.
[42] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Section 3.12: Improvements in Standards.
[43] Article 3, Section 3.1 line O of the contract states that if the Company were to become aware of any activity, problem, event or circumstance that threatens public health, safety or welfare, immediate – but no later than the earlier of four hours – it must notify the appropriate City representative and any other state representative as required by law.

dollars were going to the sewer system consent decree. By United Water's accounts, it felt constrained by the city's unwillingness or inability to support United Water financially, but never accepted blame for poor water quality or permit violations.[44]

In the long view, the particulars of the debate are, perhaps, less important the very existence of the dispute itself. The dispute suggests that contractual imbalances or significant ambiguities existed from the outset. Highly relevant issues such as capital allocations and expenditures, which affect the level of a contractor's performance, must be negotiated and clarified in advance of any agreement. United Water's claim is not with merit – it was the city's stated intention to contribute free capital generated from the partnership to the Consent Decree. However, United Water willingly entered into the agreement with the city without any objection to contract terms, assuming it could renegotiate shortly after signing.

Billing and Collection

Historically, Atlanta maintained a 98 percent or greater collection rate. Between 1998 and 2001, United Water averaged a 94 percent collection rate, representing $8,766,644 in uncollected water and sewer revenue.[45] As stipulated in the contract, United Water had clear responsibility to collect at least 98.5 percent of the billed revenue after October 1, 1998.[46] There was no penalty, short of termination, against United Water for failure to meet this target, however. It was United Water who felt the city's system of computerized billing and collections (CIS)

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[44] Correspondence between Patrick Cairo, United Water Director of Communications and Geoffrey Segal, Director of Privatization and Government Reform Policy, The Reason Public Policy Institute, November 5, 2003.

[45] City of Atlanta Press Release, June 10, 2002 as extracted from: http://www.atlantaga.gov/media/waterrelease_061002.aspx

[46] Operations and Maintenance Agreement by and between United Water Services and the City of Atlanta, effective December 24, 1998. Section 3.07: Billing and Collection.

was "cumbersome and inoperable"[47] and, after upgrading the billing and collection system, the company provided very few timely reports to the city and retained tight control over its collected information. It was not until the city hired an independent auditor at $1 million expense to taxpayers, as a result of eroding trust between the two parties, that it could confirm or dispute with any substance the true state of billing and collections.

United Water claimed that increased receivables (from $23.7 million to $57.4 million) were due not to their unwillingness or inability to enforce collection procedures but rather to the fact that the largest delinquencies came from unpaid bills by the city itself (which included 'politically protected areas' such as city the zoo, hospitals and academic institutions). Handcuffed, United Water claimed the Campbell administration's policies of non-enforcement made it impossible to meet the agreed-upon mark of 98.5 percent.

Maintenance and Distribution

A backlog of work orders and maintenance ballooned for virtually every portion of the system, from main breaks and facility maintenance to meter installation, hydrant repairs and fleet maintenance. Not only was the company failing to address the growing backlog of work orders, it could not keep competent records of the backlog. According to citizens, a broken water line could take as much as two months to fix and maintenance projects hovered at a 50 percent completion rate. Two particular claims from citizens serve as further evidence in support of the concern that private firms have little incentive to invest time, resources or their own capital to repair or maintain components of system unless the result is, eventually,

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[47] Correspondence between Ms. Remedios K. del Rosario, Commissioner Atlanta Department of Water and Mr. DeWayne Martin, Chief Operating Officer, United Water; September 13, 2003.

financially advantageous.

The first, from a resident concerned with a major water leak in the middle of the street directly in front of his home details six occasions in which he called the United Water customer call center but did not receive any return calls, let alone service to his neighborhood.[48] In his letter he states that,

> ...Our water service since the June 25th time frame has had two outages and been of poor quality. The quality of our water is brown and muddy about every nine days and it requires me to drain my hot-water heater as red clay sediment is so thick it soils my clothes in washing, toilet bowls and tub enclosures. This is a very concerning dichotomy with the city's water ban policy and health initiatives for water quality. It also costs me financial hardships to continue to drain this 50 gallon water heater.[49]

This account – detailing unresponsiveness to a problem so clearly connected to public heath – is particularly disconcerting because United Water was operating in Atlanta during a sustained drought. Not only did "unaccounted for water" (UFW) negatively impact United Water's financial standing, it undermined any conservation efforts put forth by the city's Department of Environmental Protection. The second account, by an Atlanta real estate developer, highlights her firm's difficulty in moving close to 100 residents into a new $45 million condominium development as a result of inadequate water flow through to the building's sprinkler system. According to the developer,

> With no response coming from United Water, we took it upon ourselves [to figure out the problem]. We went out on the street without a permit, without approval, dug up the water line, hired a company to come in and send a camera into the line to see what the problem was. And what we discovered was that the line had been completely constricted with debris. So we took that video and gave it to United Water. Well, the first response was: why'd you do that? And our obvious answer was: because for six and a half weeks, we couldn't get you to even return a phone call. We needed to figure out what the problem was. [50]

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[48] Correspondence between Mr. W. G. Johnson, Atlanta resident and Ms. Remedios K. del Rosario, Commissioner Atlanta Department of Water, September 4, 2001.
[49] Ibid.
[50] Interview between Linden Macintyre, CBC News and Satish Lathi, Principal, Southeast Capital Partners as extracted from CBC News "Dead in the Water," http://www.cbc.ca/fifth/deadinthewater/america.html, March 31, 2004.

At her firm's expense (in excess of $200,000), it had the problem fixed in order to move residents into their new homes without additional loses and before further threats of litigation from angry homeowners followed. According to the developer, United Water – in an effort to avoid any capital outlay – repeatedly suggested that the problem was a result of aging infrastructure and therefore an issue for the city, not the company. The developer contested this claim, however, as it had access to flow tests from a year and a half prior (during early construction), which showed no disruption in flow.

Additional accounts suggest that United Water billed the city an extra $37.6 million for service authorizations and capital repair and maintenance costs, of which the city paid nearly $16 million. Pay was withheld for the rest – $21.7 million – however, because the work either was not complete or had not even been started. In an effort to recover sunk costs in its upgraded billing and collections system, it appeared United Water was billing the city for work it did not do.[51]

Findings, Observations and Lessons Learned

The following set of observations and findings can be derived from this case study:

[51] "The water privatization 'model': A backgrounder on United Water's Atlanta fiasco," Public Citizen working paper, date unknown, 2.

1. **Public-private partnerships must account for political uncertainty and be robust enough to withstand political change.** Long-term contracts will, inevitably, eclipse the political careers of mayors and city managers. Newly elected city officials are likely to have different political objectives and want to scrutinize those decisions – particularly those that carry large 'price tags' – of previous political leadership.

2. **"Quick fix" contracts and hasty negotiations often produce inferior results in the water and wastewater sectors and produce unintended consequences that complicate, instead of alleviate, many of the problems confronting a municipal water system.** Evidence from Atlanta suggests that both the contractor and the municipality approached the agreement with a clear understanding of the city's objectives and needs, or the true state of the physical infrastructure. "Hasty" planning and contract negotiations ultimately set an uneven playing field for the contractor and city alike.

After her staff's assessment of their performance, Mayor Franklin gave United Water 90 days to make improvements to customer service, metering and billing, and water quality. In failing to make adequate improvements, her canceling of the contract signaled a vote of no confidence in United Water, although official records state a "termination for convenience" rather than "for cause." Any assessment of the contract between the city and United Water, however, must account for the considerable imbalances that existed prior to the engagement of United Water and that appropriate risks were not successfully transferred during the contracting phase.

Managing political circumstances and accounting for political change

Perhaps the largest imbalance arose out of Mayor Campbell's privatization agenda, and in assigning "blame" it is important to look across the many parties involved in this procurement, in spite of the glaring performance problems demonstrated by United Water. It should be noted that while his water department indeed oversaw a particularly difficult water system in need of significant investment, Mayor Campbell pushed his agenda and offered very little time for contract negotiations – leaving both parties particularly unsure of the true state of the water

system (proposals were due from bidders on July 2; the city picked the vendor on August 12th). By their account, United Water was forced to submit contractual change orders nearing $80 million only shortly after it was awarded the contract in order for it to operate successfully and make critical investments to ensure safety standards. While the city's water commissioner refused the requested increases on insufficient document in support of the proposed increase, within days of Mayor Campbell's departure, letters authorizing the total payment of the requested $80 million – with Mayor Campbell's signature – arrived at United Water's Atlanta offices.

Mayor Campbell is currently under investigation for corruption and bribery, from as many as six private firms who held contracts during his time in office.[52] Federal agents have successfully prosecuted ten people with business contracts or connections to City Hall. They include Campbell's top two administrators, Chief Operating Officer Larry Wallace and Deputy Chief Operating Officer Joseph Reid. Both men pleaded guilty to accepting bribes.

United Water was also unprepared to meet those changes that come as a result of new political appointments as well. Clearly, the priorities of any new administration are likely to differ from the prior administration. The extent to which both parties can, in transition, maintain an effective and transparent working relationship is essential to the health of any public-private partnership. Not only was Mayor Franklin willing – albeit with significant improvements – to continue the city's contract with United Water, she understood the precarious position the city would face as a result of canceling the contract. If it takes a champion of private-sector participation (such as Mayor Campbell) to structure a long-term concession contract,

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[52] "Federal probe of former Atlanta Mayor Bill Campbell heats up: Role in United Water operating contract questioned," The Atlanta Journal Constitution, August 11, 2004.

it takes tremendous political will – and risk – to cancel one.

Understanding and Negotiating the "Terms of the Deal"

Understanding the true "terms of the deal" is paramount to any municipal contract, and it was naive of both United Water and Atlanta to enter into any agreement without a better assessment of the value and condition of the city's water system and a pledge, by both parties, to commit CAPEX for essential system upgrades. Managing United Water proved to be difficult and costly to the city as well; the city reports that the burden of contractual oversight was so overwhelming given the volume of paperwork, meetings and general management required under the contract that it was forced to increase its contract management team from three to 15 people.

Atlanta now finds itself in a difficult position as a result of Mayor Franklin's decision to terminate the city's contract with United Water. In settlement, Atlanta received $5 million, and inherited a system in only marginally better condition than it was before 1998, prior to the contract with United Water.[53] Privatization proponents claim that the true benefits of the contract extend beyond water quality and maintenance issues; United Water cites, for example, the many benefits local minority subcontractors received as a result of the company's procurement policies and points to a performance scorecard in excess of 100 percent on preventative and corrective maintenance, meter reading and installation and customer responsiveness in its final 13 weeks as operator.[54] It is impossible to equate improvements in local procurement to improvements water quality, however, and in

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[53] City of Atlanta and United Water: "Joint Press Release: City of Atlanta and United Water Announce Amicable Dissolution of Twenty -Year Water Contract," January 24, 2003.

[54] Correspondence between Patrick Cairo, United Water Director of Communications and Geoffrey Segal, Director of Privatization and Government Reform Policy, The Reason Public Policy Institute, November 5, 2003.

doing so it discounts a more significant result that will be measured closely in the coming years.

Difficult circumstances exposed the many weaknesses of Atlanta's city management in the mid and late 1990's. While Atlanta indeed re-inherited a troubled water system, the city is now managed by a stronger, and certainly more transparent government capable of meeting the challenges of providing safe and affordable water to the its residents. Progress, of course, does not come without a price and both the city government and its residents seem willing to accept this reality. Atlanta will likely have to raise water and sewer rates by significant margins in order to cover the investment costs required to keep the system operating and upgrade the necessary components. In his public memo of the United Water/Atlanta partnership "More Questions Remain for Atlanta After United Water," Geoffrey Segal – Director of Privatization and Government Reform at the Reason Public Policy Institute states, "furthermore, Atlanta residents will be relegated to the same expensive, poor-quality service they had become accustomed to with municipal operation."[55] Mr. Segal – a dedicated advocate of privatization misses the point here completely – having "tried" privatization, Atlanta is now more committed to public management and will likely succeed where United Water failed. Indeed, the city's new water department has called for increased support from the federal government to relive it of the pressures associated with covering the cost of system upgrades.

[55] Segal, Geoffrey, "Issue Analysis: More Questions Remain for Atlanta After United Water," Reason Public Policy Whitepaper, January 21, 2003, as extracted from http://www.rppi.org/atlantawaterprivatization.html.

CHAPTER 4. Case Study: Indianapolis, Indiana

Overview of the Cases

This second case study examines two public-private partnerships in Indianapolis with different vendors – The White River Partnership (hereafter referred to as WREP) and Veolia Water NA (hereafter referred to as Veolia) – for wastewater management and water provision, respectively. Among private sector providers, both contracts are touted as "successes" and offered as significant proof that public-private partnerships can contribute to water quality improvements, financial savings and operational efficiency unobtainable under public management. Both of these case studies examine the circumstances surrounding the decision to contract out operations and management services with WREP and Veolia, as well as the political and environmental climate in which both firms operate.

In January 1994 – prior to the IRS amendment – Indianapolis and the White River Partnership, a consortium of three companies: IWC Resources Inc. (parent firm of the Indianapolis Water Company), Lyonnaise des Eaux-Dumez (parent company of United Water) and JMM Operational Services Inc. (a subsidiary of GWC Corp, which in turn was owned by Lyonnaise and the engineering firm Montgomery-Watson) entered into a five-year contract for the operation and maintenance of the city's two advanced wastewater treatment (AWT) facilities. The $14 million annual contract, then the largest involving wastewater operation (pre-Atlanta), covers personnel management, routine maintenance and daily operational costs. In 1997, the contract was extended for ten years, and will again be "re-bid" at the end of 2007. One striking characteristic of the contract is that by many measures, the two Indianapolis AWT facilities were among the best performing and best managed

public facilities in the United States. Between 1982 and 1993, both plants won numerous awards for innovation, safety, and performance.[56] Procurement nevertheless took place *despite* an independent evaluation conducted by Ernst & Young indicating that municipal savings would be minimal (approximately 5 percent) and that labor could only be safely cut by the same amount.

In 2002, building on a string of municipal public-private partnerships and privatizations (including the wastewater system as well as the city's parks and airport), Indianapolis and Veolia Water NA entered to a 20-year $1.5 billion partnership for the city's water system. The agreement calls for Veolia to manage all operations, maintenance and customer service of the city's waterworks. Additionally, the company will oversee more that $400 million in capital improvements. This move by the nation's twelfth-largest city marked the largest water partnership in the United States and set an industry standard by directly linking contract performance to compensation.

Case A: Indianapolis AWT Facilities

Network Overview and City Demographics

As the largest city in America not located on a navigable body of water, Indianapolis has unique wastewater treatment needs. In order to meet these needs, the city employs two wastewater treatment plants located on the White River, a small river that runs through downtown Indianapolis. The first of these facilities, the Belmont Plant, was constructed in 1924 and has been continuously upgraded and expanded to keep pace with population, commercial and industrial growth. The Belmont AWT Plant was originally placed into service as a primary clarification

[56] Goldsmith, Stephen. *The Twenty-First Century City: Resurrecting Urban America* (Washington, DC: Regnery Publishing, Inc.), 200.

plant.[57] Numerous upgrades to add secondary and tertiary treatments now allow an average flow capacity of 120 million gallons per day, with peak flows up to 300 million gallons per day. The Southport AWT Plant was first placed in service in 1966 to meet the needs of the growing city. Originally designed as a secondary treatment plant, upgrades in the 1970's and 1980's added advanced treatment facilities, allowing increased average daily flows of 125 million gallons per day, and peak flows of 180 million gallons per day. The wastewater collection system consists of nearly 3,000 miles of sewer lines ranging from 8" to 120" in diameter, almost 110,000 manholes, approximately 50,000 basin/inlet structures, and more than 250 wastewater lift stations. A good portion of this system includes a combined sewer system, built in the early 1900's, and designed to carry both storm water and sanitary waste from residences and businesses. The combined sewer area is located primarily in Center Township, and covers approximately 55.5 square miles. The rest of the service area contains separate sanitary and storm sewers, and covers approximately 222 square miles.[58]

By 1982, both facilities had reached capacity, showed significant signs of decay and lacked the technology to meet the standards set by the Clean Water Act of 1972. New standards required the plants to be capable of treating as many as 245 million gallons of wastewater a day while discharging effluent into a very small body of water. With the help of the EPA, the city upgraded both plants to Advanced Wastewater Treatment plants though a $250 million renovation. To meet the

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[57] Primary clarification is the first stage of wastewater treatment, whereby solids are removed from the wastewater. As technology developed with regulatory requirements, secondary and tertiary treatment technologies (e.g. aeration and disinfection) were developed to handle increased volume of waste influent.

[58] The City of Indianapolis Department of Public Works online, http://www.indygov.org/eGov/City/DPW/Environment/Wastewater/home.htm.

rehabilitation needs of the combined sewer system, the city proposed increasing sewer usage rates by 37 percent on approximately 800,000 constituents.[59]

Pressure to Pursue a Partnership

Initiating a public-private partnership to handle the city's wastewater treatment facilities was a cornerstone of Mayor Stephen Goldsmith's "reinvention agenda." The existing facilities had been cited as model public facilities that were efficiently operated and had an unblemished record of regulatory compliance when Goldsmith entered office in a city with a sound AAA debt rating. In the spring of 1993, however, Mayor Goldsmith established a bipartisan review committee to examine the city's options regarding the management of wastewater treatment plants following "successful" privatization of the city parks, meter reading, and public pools. The composition of the committee and the lack of public participation in the decision to engage in a public-private partnership was widely criticized in *Public Works Management and Policy:*

> At no time between September 1992 and November 1993 did the mayor or his administration hold public hearings on the plans to contract out plant operations and management. Fundamentally, beyond the mayor's expressed intention to shrink the Indianapolis public sector, primary input in the most formative stages of the effort came from SELTIC, which not only made the initial recommendation to privatize the wastewater treatment plants, but also recommended consultants to perform the necessary studies.[60]

The circumstances that led to the Indianapolis-WREP public-private partnership ultimately had little to do with environmental or public health concerns, or even pressure to meet the water needs of a growing city or to rehabilitate or replace aging infrastructure. Rather, the partnership should be seen as a manifestation of

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[59] The City of Indianapolis Department of Public Works online, http://www.indygov.org/eGov/City/DPW/Environment/Wastewater/home.htm.

[60] Nunn, Samuel and Montgomery, William. "Privatization, Participation and the Planning Process: A Case Study of Wastewater Treatment Infrastructure." Public Works Management and Policy (2000):143-59. Extracted from Ritchie, Ingrid and Kennedy Sheila (eds). *To Market, To Market: Reinventing Indianapolis* (New York: University Press of America, 2001), 290.

steadfast political determination to promote a private-sector agenda. Mayor Stephen Goldsmith took office in 1992 on a platform of organizational change that he said was integral to the success of a "21st century city." Goldsmith viewed government as the cause of problems facing cities while he saw privatization as the answer. In his book, *The Twenty-First Century City*, he writes, "Not only are the cities on the skids, but in most cases government itself has been the grease that hastened the pace of decay. Because government simply confiscates dollars rather than competing for them, government managers do not get good information about their customers' needs and wants'."[61]

From the Mayor's perspective, "privatization is an attempt to reverse much of the history of the twentieth century."[62] He overtly praises privatized city suburbs or "edge cities," and, in his book, reassures readers that "Cities in the 21st century can be just as exciting and vibrant as they were in the early part of the 20th and 19th centuries."[63] In his writing, Mayor Goldsmith seems to undermine much of American urban history, discrediting the role of the public sector in developing important public safety and transportation networks in rapidly developing urban areas, for example, or providing employment opportunities to help manage growth and change.

Discounting the mid-1800's excesses in the private provision of municipal services that ultimately led to a backlash against contracting out and privatization, almost immediately after taking office, Mayor Goldsmith announced his plans for a private-sector commission, which later came to be known as the Service, Efficiency and Lower Taxes for Indianapolis Commission (SELTIC) – charged with reviewing every

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[61] Goldsmith, Stephen. *The Twenty-First Century City: Resurrecting Urban America* (Washington, DC: Regnery Publishing, Inc.), 5 and 67.
[62] Ibid, 15.
[63] Ibid, 3.

function performed and every service provided by city-country government. Goldsmith was heavily criticized by the city's labor unions when he said a city could be run with just a mayor, a police chief, a planning director, a purchasing agent and a handful of contract monitors.[64]

Contract Details

The contract to manage the advanced wastewater treatment (AWT) facilities was awarded to the White River Partnership in January 1994, as a result of its low bid. Under the terms of the contract, WREP has complete responsibility for day-to-day operations and maintenance of the facilities, including water quality testing. WREP has been given a great deal of latitude in how it operates and maintains facilities. A primary limitation is that it must meet discharge water quality standards. WREP also has responsibility for recommending and then implementing approved capital additions to or rehabilitation of the plant and equipment. Compensation to WREP is a fixed sum for general operation, with additional payments for periodic corrective maintenance that the city and WREP jointly agree is required. Additional funds are provided by the city to WREP for implementing capital improvements. These improvements are based on a capital program jointly developed by WREP and the city. The contractor exercises no control over sewer rates, which have remained unchanged since 1985.

Financing the Partnership

The city is guaranteed savings of $250 million over the duration of all three contracts (sewers, original AWT and extension), which run until December 2007 (Within four years of its first contract with Indianapolis, United Water negotiated no-

[64] Savas, E.S. *Privatization and Public-Private Partnerships* (New York: Chatham House Publishers, 2000), 175.

bid expansions of scope, extensions of term, and increases in price). WREP received a $14.4-million per year annual fee under the original contract. The city retained responsibility for maintenance costs, which totaled about $3 million per year. Under the extended contract, compensation is also based on an annual fee, with modifications for maintenance, consulting and capital investment costs, as well as an adjustment for inflation. The 1999 base portion of the annual fee is $15,360,481. The 2000 base annual fee is $15,441,006. Base fees are indexed according to a complicated formula stipulated in the contract, but they essentially follow inflation.[65] WREP receives additional compensation for assistance with capital improvements planning. Payments for these services range between $180,000 and $300,000 annually.[66] The third source of compensation is described in Section 8.07 of the contract, "Additional Services." Additional services include any services provided to the city by WREP that are not called for in the contract. They are billed at cost plus 14 percent although, to date, WREP has provided only those services identified explicitly in the contract. According to some, too much uncertainty – driven in part by disputes in other cities over "additional services" – exists in the relationship between the city and he contractor to allow WREP to extend itself beyond the strict terms of the contract.[67]

Labor Management

The partnership proposed to achieve its savings by "slashing personnel, supply

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[65] Amended and Restated Agreement for the Operations and Maintenance of the City of Indianapolis, Indianapolis Advanced Wastewater Treatment Facilities, by and between the City of Indianapolis and the White River Environmental Partnership. Section 8.01: Annual Fee.
[66] Ibid, Section 7.04: Capital Improvements and Major Corrective Maintenance.
[67] Fantauzzo, Steven; Regional Director of the American Federation of State, County and Municipal Employees (AFSCME) Indianapolis, telephone interview, March 1, 2005.

and professional costs" and through "advanced technology."[68] Indeed, staffing levels hover near 168, down from 330 when WREP took over management of the facilities. Under the contract, WREP was required to interview every existing worker, but was not obligated to hire anyone. Any worker who refused an offer from WREP of a comparable job (comparable is defined as +/-1 pay grade) was effectively "on his own." According to Steve Fantauzzo, Regional Director of the Indianapolis AFSCME Union, significant labor safeguards were intentionally excluded from the contract, and numerous obstacles were included to ensure that the contractor could deliver on promised savings through quick workforce reductions.[69]

First, as is common in many operations and management agreements, WREP proposed mandatory drug and performance tests on plant employees wishing to retain their positions under new management. While the former can be considered a necessary safeguard, the later often forces employees to prove their merit on technology and systems unique to the contractor, without sufficient lead-time for training. According to Mayor Goldsmith, employment restructuring was a relatively easy issue; stating simply, "they (United Water) had more PhDs than the city had employees."[70] Inequities remain despite the contractual obligation to employee former city employees with comparable salaries. The government pension plan was replaced with a considerably less robust 401(K) option, vacation and sick leave were reduced and the overall cost of benefits to employees actually rose following the management transfer.

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[68] Ritchie, Ingrid and Kennedy Sheila (ed). *To Market, To Market: Reinventing Indianapolis* (New York: University Press of America, 2001), 288.
[69] Fantauzzo, Steven; Regional Director of the American Federation of State, County and Municipal Employees (AFSCME) Indianapolis, telephone interview, March 1, 2005.
[70] Goldsmith, Stephen; Former Mayor of Indianapolis and Kennedy School of Government Lecturer, in-person interview, February 2, 2005.

Environmental Management

Section 6.17 of the contract specifically allowed WREP to institute a "process change," defined as "adjustments to major components of the AWT Facilities, such as land application of sludge and use of chlorination."[71] Before the partnership, the AWT facilities were among the most advanced in the country, in part because they used ozonation rater than chlorination.[72] Many environmental advocates claim that chlorine treatment is outdated and hazardous, and considerable concern was voiced in Indianapolis about the proposed change in treatment technology.[73] In 1993, the *Indianapolis News* opined:

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[71] Amended and Restated Agreement for the Operations and Maintenance of the City of Indianapolis, Indianapolis Advanced Wastewater Treatment Facilities, by and between the City of Indianapolis and the White River Environmental Partnership. Section 6.17: Process and Operational Changes.

[72] Ozone treatment is more expensive than chlorination because it requires more energy and labor. It is generally believed to be "environmentally safer," in that the chlorination process creates carcinogenic by-products. Chlorine is the most commonly used disinfectant in the wastewater treatment process and can be supplied in the form of a liquefied gas which has to be dissolved in water, or in the form of an alkaline solution called sodium hypochlorite, which is the same compound as common household chlorine bleach. Chlorine is quite effective against most bacteria, but a rather high dose is needed to kill viruses, protozoa, and other forms of pathogen. Chlorine has several problems associated with its use, among them 1) that it reacts with organic matter to form toxic and carcinogenic chlorinated organics, such as chloroform, 2) chlorine is very toxic to aquatic organisms in the receiving water-- the USEPA recommends no more than 0.011 parts per million (mg/L) and 3) it is hazardous to store and handle. Hypochlorite is safer, but still produces problems 1 and 2. Problem 2 can be dealt with by adding sulfur dioxide (liquefied gas) or sodium sulfite or bisulfite (solutions) to neutralize the chlorine. The products are nearly harmless chloride and sulfate ions. A more powerful disinfectant is ozone, an unstable form of oxygen containing three atoms per molecule, rather than the two found in the ordinary oxygen gas which makes up about 21% of the atmosphere. Ozone is too unstable to store, and has to be made as it is used. It is produced by passing an electrical discharge through air, which is then bubbled through the water. While chlorine can be dosed at a high enough concentration so that some of it remains in the water for a considerable time, ozone is consumed very rapidly and leaves no residual. It may also produce some chemical byproducts, but probably not as harmful as those produced by chlorine.

[73] Extracted from Environmental Defense website: www.environmentaldefense.org. "Is Your Hometown Safe from Chemical Disaster?" December 2, 2003.

> The most persuasive argument against current proposals for city wastewater treatment has to do with keeping White River clean and safe. Will private management maintain the high environmental standards that the city's workers have implemented at the treatment plant? WREP plans to eliminate the present treatment process, which consists of ozone and cryogenic oxygen generation. This process costs more than other treatment methods but is considered among the safest, most effective and environmentally sound. WREP would replace that method with a chlorine-based process, which is a less expensive means of treatment, but one that critics say is dangerous to workers and potentially harmful to the environment. High levels of chlorine, for instance, can kill a river's fish and other aquatic life.[74]

The switch to chlorination provided a large measure (roughly 20 percent) of the total savings achieved under the partnership.[75] Not surprisingly, much of the criticism directed at the Mayor's decision comes from environmental and health advocates who point to the process "downgrade" as a myopic effort to save money while jeopardizing human health and welfare. During the public debate about service quality surrounding the contract for AWT services, Glen D. Paul, a board member of the Hoosier Environmental Council and former EPA official repeatedly suggested that the chlorine treatment process produces a lower quality of treated water than the ozone and cryogenic oxygen generation process. The Indiana Department of Environmental Management agreed, finding that the chlorine treatment process contributed to the death of over 500,000 fish in two bypass events in the fall of 1994.[76] city officials and WREP representatives counter that the plant operates within the boundaries of acceptable practice and exceeded pollution limits only once in 1994.

Whatever the merits of the two systems, it is true that the less-expensive chlorination process complied with existing EPA standards, and thus at issue is not

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[74] *Indianapolis News,* 1993; as extracted from Ritchie, Ingrid and Kennedy Sheila (eds). *To Market, To Market: Reinventing Indianapolis* (New York: University Press of America, 2001), 290.
[75] Ibid, 291.
[76] Mullins, Daniel and Zorn, C. Kurt. "Privatization in Indianapolis: A Closer Look at Savings and the Wastewater Treatment Facility," (Heartland Institute Internal Press, 2002), 16.

necessarily concern for public heath but rather regulatory and contractual violations under each treatment system, and the ability to set – and subsequently meet – standards developed by state and federal regulators as well as by the local administration. That is, with respect to wastewater effluent, there were no documented regulatory infractions by EPA during the city's tenure as manager of the AWT facilities. Clearly, the previous administration had made a policy decision favoring the more expensive treatment on environmental grounds. By the same reasoning, the Goldsmith administration could have made a decision the added water quality was not worth the added cost, rather than hiring private management to effect the change.

In addition to the aforementioned fish kills, state conservation officials reported that raw and partially treated sewerage polluted the White River for about ten hours during the weekend of September 23 and 24, 1994.[77] The spill led to an investigation by then prosecutor Jeffrey Modisett into the operation of the plant and allegations of an attempted cover-up. The Indiana Department of Natural Resources (DNR) blamed the operation of the Belmont facility and assessed a fine against the city, concluding that WREP had dumped water with too much chlorine and not enough oxygen into the river. In February of 1996, after additional problems of a similar nature, Mayor Goldsmith asked the state legislature to force the Indiana Department of Environmental Management to relax water quality standards applicable to the city's sewerage treatment facilities.[78] The bill was rejected in the Senate by a vote of 26-24. If nothing else, the downgrade in treatment technology and move by the Goldsmith administration to relax water quality standards can be

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[77] Ritchie, Ingrid and Kennedy Sheila (eds). *To Market, To Market: Reinventing Indianapolis* (New York: University Press of America, 2001), 291.
[78] Ibid.

seen as a dangerous double-standard, whereby rules are changed to fit the process, as opposed to changing the process to fit the rules. While the bill was rejected, both the close margin and the mere fact the opportunity exists to relax standards to maintain a cost-effective treatment standard should have been cause for concern amongst the Indianapolis water users.

Maintenance and Repair

In addition to the debate about environmental impacts as a result of the changes in treatment technologies, the WREP partnership encountered many of the same problems that plagued other partnerships and privatizations proposed by Mayor Goldsmith. Shortly after assuming control of the of the wastewater treatment facilities, the *Indianapolis News* reported that that approximately $715,000 of corrective maintenance work had been done in violation of the state bid and prevailing wage laws. The Mayor's initial response was first to contend that state laws were "outmoded," "hopelessly confusing" and "too antiquated for modern government," and to complain that the benefits of public-private partnerships would be lost if WREP had to pay prevailing wages. In a later letter to the *Indianapolis News*, he tried a different approach suggesting that, "whatever WREP pays is the prevailing wage because the treatment plant operation is the largest in the state." Legally, however, size *is not* the criterion for determining prevailing wages.

Results of the Partnership

An assessment of the contract suggests inadequacies in a number of areas, particularly oversight. While the contract called for the submission of various reports to the city, no other monitoring or oversight provisions were included. Then, the Director of the Indianapolis Department of Public Works explained that the city had

"no special procedures in place to monitor WREP's compliance with its contract."[79] It is unclear what recourse the city might have in the event reports are not made or if they are unsatisfactory. In the event of a breach of contract, the city's only remedy is termination of the agreement. The contract does not, however, address the very significant practical realities of termination. For example, all plant employees are WREP employees, not employees of the city. Under the termination provision of the contract, the city has the right to "utilize" WREP employees at such time as it assumes control and the corresponding obligation to reimburse WREP for their use, but no time period is specified.[80] Would these workers "revert" to the city payroll at some future time? If the skilled workers chose not to remain, what recourse would the city have? Would there be a hiatus in water treatment? Who would own management materials and records that WREP prepared? How would the logistics of the transition be handled? None of these questions are addressed in the contract.[81]

In the face of considerable public scrutiny – particularly surrounding transparency and public involvement in the procurement process – Goldsmith and his team adamantly defend their decision to contract with The White River Partnership, claiming the savings "speak volumes" in support of such innovative approaches to city management. While savings to the city are reported to have reached close to 44 percent (approximately $19 million per year) they should not be

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[79] Ritchie, Ingrid and Kennedy Sheila (eds). *To Market, To Market: Reinventing Indianapolis* (New York: University Press of America, 2001), 304.
[80] Amended and Restated Agreement for the Operations and Maintenance of the City of Indianapolis, Indianapolis Advanced Wastewater Treatment Facilities, by and between the City of Indianapolis and the White River Environmental Partnership. Section 9.02: Personnel Changes by Contractor.
[81] Fantauzzo, Steven; Regional Director of the American Federation of State, County and Municipal Employees (AFSCME) Indianapolis, telephone interview, March 1, 2005.

considered apart from the associated costs of procurement, which included legal and consulting fees paid by the city before and during the contract. As previously noted, moreover, savings, particularly with respect to the management of critical natural resources, should not be the only consideration in qualifying the successes of municipal partnerships. The Goldsmith administration defines savings as the difference between the activity-based cost of a city service and the contract bid amount for the service by a vendor. However, to determine the extent of savings from privatization, both cost factors must be examined.

Activity-based cost accounting is a system introduced by the Goldsmith administration which attempts to assign costs to city services. While any attempt to quantify the cost of public services is laudable, activity-based cost accounting has proven to be quite subjective and imprecise.[82] First, the baseline cost for services is only an estimate in the vast majority of cases. Services that have historically been provided by a large department, such as the Department of Public Works, cannot be easily separated or "costed out." Even direct costs can be difficult to calculate accurately. Often, the direct costs of a service are estimated by calculating avoidable costs – the costs not incurred if the targeted service is not provided. When the same personnel and equipment are used for a number of different services, it is possible that the direct costs associated with one particular service can be overstated by attributing the cost of the personnel and equipment to more than one service, resulting in double-counting.

Second, even if it is possible to get a reasonably objective estimate of the direct cost of providing a service, the calculation of indirect costs is difficult. The

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[82] Mullins, Daniel, Zorn, Kurt. "Privatization in Indianapolis: A Closer Look at Savings and the Wastewater Treatment Facility," (Bloomington: Indiana University Press and the Heartland Institute, 2000), 9.

subjectivity involved in determining indirect costs often shifts indirect costs upwards by allocating too much overhead and administrative cost. The result is a baseline estimate that is too high which means the estimated savings from contracting are also too high.

Finally, contract costs do not include costs associated with contract development and monitoring. Also, some contracts do not include overhead costs. The city's contract with WREP permits the contractor to bill the city for maintenance. These costs are outside the contract costs as defined by Mayor Goldsmith's savings estimates. Furthermore, there are few controls that prevent either overstatement of the baseline cost or understatement of the contract costs. In fact, the process as it operates today is nearly devoid of independent checks and balances.

Findings, Observations and Lessons Learned

Clearly, two distinct opinions exist regarding the provision of wastewater services through the White River Partnership. Mayor Goldsmith's team expressed the view that performance is relative, and "best in class" for public facilities may not compare with "best in class" privately-run facilities. His comment about testing the systems in the marketplace serves as evidence that he has little faith in traditional public management. Moreover, he clearly calculated that had the market proven him wrong, the political capital lost would have been minimal. While his decision may have been "win-win" with respect to city management, it undermined the core competencies of the city itself. If the city had done such a good job running the AWT facilities, how could private contractors reduce the cost of operating the plant so dramatically? One contributing factor might be the way overhead is assigned. An Ernst and Young analysis suggested that the 5 percent personnel reduction might be coupled with the elimination of excess city overhead charges to trim total

management cost by 17 percent. Shifting general city overhead charges away from AWT operations represents savings only to the AWT, not to the city as a whole; these overhead costs must be allocated to other accounts. Therefore, reductions due to overhead accounting changes can hardly be considered savings from the partnership.

Further, savings due to changes in the production process truly are savings only if they result in the same or a greater level of service. It is unlikely that a change in the treatment process resulted in any savings that can be directly attributed to the public-private partnership. First, there is reason to believe that a similar process change could not have been implemented under public management. Second, in wastewater treatment a change in treatment process invariably produces a change in output. There is reason to believe that the process change adopted by WREP produces an inferior result. Therefore, it is very difficult to unequivocally credit privatization of the AWT facilities with overall projected savings since the quality of service may have been adversely affected.

Finally, savings generated through employee reductions must be considered in the same context as savings generated through changes in the production process. The benefit of municipal savings through labor reductions can only be realized if those reductions do not lead to efficiency losses or poor customer service. Citywide, employment decreased significant during Mayor Goldsmith's two terms. In 1991, the city employed approximately 5,000 people, by 1996 there were almost 1,000 fewer employees, a decrease of nearly 20 percent (see table 4.1).

Table 4.1. Indianapolis Employment, 1991-1996			
Year	**Public Safety**	**Non-Public Safety**	**Total**
1991	2,368	2,588	4,956
1992	2,188	2,251	4,439
1993	2,150	2,082	4,232
1994	2,187	1,708	3,895
1995	2,268	1,814	4,082
1996	2,293	1,716	4,009

Source: City of Indianapolis Annual Budgets, 1991-1996 (www.indygov.org)

It appears that only public-safety employees were spared by the Mayor's reinvention agenda. Indeed, Goldsmith paid special attention to this area during his time in office, increasing the budget for related services in this area by nearly 25 percent from $139,157,968 in 1992 to $171,176,269 in 1996.[83] In the case of the AWT facilities, AFCSME representatives claim that Goldsmith intended to exercise employee reductions from the outset by excluding rank and file membership from bidding on management of the plant publicly (a process know as managed competition, discussed in greater detail in Chapter 5), thereby violating the collective bargaining agreement between the city and the Union.

Case B: Indianapolis Water Treatment Facilities

Network Overview

With a treatment capacity of 143-million-gallons-per-day (MGD) and peak demand exceeding 200-MGD, the Indianapolis water system serves 1.1 million people within a 25-mile radius. Components of the water system include four water treatment plants, ranging in size from 76-MGD to 8-MGD; seven groundwater treatment plants ranging in size from 3-MGD to 1-MGD; 4,000-mile distribution system; 58 wells; 31 pump stations; and numerous storage tanks. The system currently employs approximately 450 people.[84]

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[83] City of Indianapolis Annual Budgets, 1991-1996 (http://www.indygov.org)
[84] Indianapolis Water Online: http://www.iwcr.com/USFIWSplash.aspx

Pressure to Pursue a Partnership

The evolution of the Indianapolis-Veolia public-private partnership grew out of a unique history of ownership and management of the city's drinking water infrastructure. Until April 2002, the city's water system was owned and operated by NiSource, a regulated utility company. In 2002, NiSource merged with a large energy company and was forced under federal regulation to divest itself of its water utility assets. Within 90 days of purchasing the water assets back from NiSource, under the direction of Mayor Goldsmith's successor Bart Peterson, the city developed an RFP for the entire operation and management of the drinking water network, which it subsequently awarded to Veolia. Mayor Peterson, a defender of the Goldsmith model of city management, wanted the city to retain ownership of the assets and control of the rate structure but had no intention of using – or adding – city employees to operate and manage the water system.

Clearly, the wastewater system set an unusual precedent and presented a difficult political environment in which Mayor Peterson had to operate. Had the city retained management rights of the water system, probably the "costliest" component of the city's budget, Mayor Peterson would have risked undoing the momentum that he and his predecessor made through a string of municipal privatizations. Bidding-out the operation and management of the water system also meant that United Water – already present and benefiting from a positive political relationship – could compete for the contract. If he were to award the contract to United Water, however, Mayor Peterson risked being accused of granting United Water a monopoly.

Whether or not Veolia was ultimately successful in its bid for the 20-year partnership because of its experience, cost of service, or connections to Mayor Peterson is a topic of ongoing debate between supporters and opponents to the

partnership. Critics point to a link between the Peterson-influenced selection process and the company's impressive list of prominent advisors. Those advisors hired by Veolia included Marion County Democrat Party Chair Ed Treacy, former state Democrat Chair Kip Tew and Tom New, former chief of staff for Governor Frank O'Bannon.[85] The Veolia proposal also listed former state Democrat Party Chair Robin Winston as leading their Community Oversight Committee. Pat Terrell, former political director of the state Democrats, and Robin Winston's business partner, were to assist Winston and Veolia in identifying issues important to the community at large. Tew, New, Winston and Terrell gave a total of $5,300 to Peterson's re-election campaign in 2002. Bose McKinney, the law firm which partners in government lobbying with Ed Treacy, contributed $11,250 to the mayor's campaign during the same year.

Even beyond the consultants' ties with the mayor, the deal spawned a "get-a-contract make-a-contribution pattern" that gives at least an appearance of quid pro quo. Law firms who worked on the deal were paid over $3.5 million, and gave nearly $40,000 to the mayor's campaign in 2002. Table 4.2 provides additional details about the involvement of different firms: [86]

Table 4.2. Summary of Organizational Contributions, Payments and Involvement

Agency/Organization/Individual	Payment	Contribution
Sommer and Barnard (legal)	$2.95 million (Indianapolis Bond Bank); $109,000 (Department of Waterworks)	$10,285
Ice Miller (legal)	$909,000 (Indianapolis Bond Bank)	$7,000
Baker and Daniels (legal/transaction advisory)	$308,000 (Indianapolis Bond Bank)	$36,000
Bose McKinney (legal)	$36,000 (Indianapolis Bond Bank)	$11,250
DLZ Corp.	$29,000 (Indianapolis Bond Bank)	$18,000

[85] Miller, Jack. "Troubled Water: Six questions about the Indianapolis Water Company deal," May 28, 2003. As extracted from http://www.NUVO.net.

[86] Ibid, (all information regarding the connection between Mayor Bart Peterson and Veolia Water NA extracted from Jack Miller, through personal telephone conversations and three articles in nuvo.net).

Contract Details

Out of the $1.5 billion contract, approximately $1.1 billion represents operations and maintenance service fees and approximately $400 million reflects capital improvement projects expected to be managed by Veolia. By directly linking performance to compensation, the partnership introduced new standards in the water outsourcing industry. In addition to a base contractual fee, Veolia proposed, and now follows, an incentive-based performance plan that provides payment of fees based on meeting 40 specific and quantifiable performance metrics for excellence of water quality, customer service, operation and management, and community involvement. If the company does not meet those standards, it is not paid fees linked to the performance metrics.

The development of this type of contract signals a sea change in municipal partnerships and underscores some important points regarding previous partnerships, including the one in Atlanta. Clearly, the absence of performance incentives, coupled with high fixed fees for service sends mixed signals to private contractors. Under a fixed fee for service structure, contractors are offered considerable "carrots" without any "sticks." That is, performance guarantees introduce yardstick measurements by which a city can more effectively gauge the performance of contractors, making it much more difficult for a contractor to shortchange certain items like preventative maintenance, treatment or laboratory testing while overcompensating in billing and metering. In these cases, it might be concluded that both the contractor and municipality are equally at fault; the contractor for poor performance, and the city for setting contract standards without sufficient clarity. Indianapolis' contract with Veolia sets a different precedent, however. "Our contract with the city calls for a higher level of service to the

customer. If we don't perform, we don't get paid for that portion of our contract," said Tim Hewitt, President and Operations Manager for Veolia Indianapolis.[87] Incentive criteria are measured in the following three general categories: customer service, water quality and discretionary measures. An analysis of specific contractual components and performance incentives follows.

Employee Retention and Labor Relations

The cornerstone of the agreement between the city and Veolia is employee management, although many precedents set in the contract have been undermined by recent labor disputes between union and non-union employees. Section Four of the contract states that, upon its commencement, Veolia must recognize all certified unions representing exiting employees and must assume current collective bargaining agreements.[88] However, during the term of the agreement, Veolia is only required to:

1. Maintain a competent workforce at a skill level sufficient to meet all operational and maintenance needs in a timely and efficient manner; and
2. Ensure the continued and uninterrupted operation of the system on a twenty-four hour per day, seven-day per week basis.[89]

Furthermore, at a period of no more than ninety days following the commencement of the agreement, a supervisory-level employee (or set of employees) – appointed by Veolia – were required to conduct performance review sessions with each employee.

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[87] Hewitt, Tim; President and Operations Manager, Veolia Water Indianapolis, telephone interview, March 8, 2005.
[88] Management Agreement by and between USFilter Operating Services, Inc. and the Consolidated City of Indianapolis, Department of Waterworks; March 21, 2002. Section 4.02: Personnel.
[89] Ibid.

The difficulties created by management transfers of this type generally involve the renegotiation of collective bargaining agreements with recognized unions. While such agreements provide sustained security for union employees up to their renegotiation date, evidence in other operation and management partnerships for water and wastewater services suggest that the lion's share of savings will be generated through labor renegotiations, which include streamlining or restructuring public benefits including sick and personal leave, health benefits and retirement contributions.

Letter of Credit

Section 12 of the contract between Veolia and Indianapolis requires that during the life of the contract and continuing after until all monetary obligations of the company are complete, Veolia must maintain a $40,000,000 irrevocable, direct draw letter of credit.[90] The letter of credit ensures that should Veolia default financially, the city – at its discretion – is allowed to draw from this credit source to cover costs relating to the water system. The addition of this section in the contract suggests that the city may have had some reservations about Veolia as a corporate entity, despite the strength of its bid. Such reservations are not unfounded – the "back story" of Veolia is one that includes bribery convictions, raids on corporate offices by evidence-seeking securities investigators, class action suits filed by shareholders on both sides of the Atlantic, collapses in both its stock price and its credit rating, massive debt necessitating a fire-sale of assets, a discredited and ultimately ousted CEO, financial uncertainty, and an identity crisis resulting in numerous name

[90] Management Agreement by and between USFilter Operating Services, Inc. and the Consolidated City of Indianapolis, Department of Waterworks; March 21, 2002. Section 12.01: Letter of Credit.

changes.[91]

Water Quality and Water Loss

Under the contract, the company is required to meet all applicable regulatory water quality standards. In particular, each plant must meet each and all criteria in the National Primary Drinking Water Standards and *strive* to meet standards in the National Secondary Standards.[92] Veolia is also responsible for resolving taste and odor problems that have plagued the waterworks system for years, most often during the summer months. Prior to Veolia's involvement, plant operators treated reservoirs with algaecides, added powdered activated carbon to the treatment stream and added additional chlorine, all of which reduced, but did not eliminate, the problems.[93] In 2001, prior to Veolia's selection, more than 500 taste and odor complaints were made by citizens. In 2003, there were only 37, and at mid-year 2004, there were only 16 complaints.[94] Veolia is contractually required, moreover, to invest a minimum of $17,000,000 over the course of twenty years to remedy taste and odor concerns.[95] Veolia entered into a 20-year research and development program with Indiana University-Purdue University Indianapolis to create the Indianapolis Water Quality Project. The partnership is a cooperative program that will provide long-term analysis and perform water quality studies to help understand the conditions within local reservoirs that lead to bloom development, determining

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[91] "Veolia Environment: A Corporate Profile." Public Citizen working paper, 2005.
[92] Management Agreement by and between USFilter Operating Services, Inc. and the Consolidated City of Indianapolis, Department of Waterworks; March 21, 2002. Exhibit 1: Performance Standards and Guarantees.
[93] Ibid.
[94] Veolia Water Online, Municipal Partnership Case Studies: http://www.veoliawaterna.com/project/project.asp?statename=Indiana&ID=117&noflash
[95] Management Agreement by and between USFilter Operating Services, Inc. and the Consolidated City of Indianapolis, Department of Waterworks; March 21, 2002. Section 4: Operations and Maintenance.

the role of watershed inputs to the water quality of the reservoirs, and the role of biogeochemical cycling of nutrients. Veolia and the two universities have agreed to share, publicly, the data collected and results produced from these studies.[96]

Performance Measurements

Thirty-five percent of Velolia's performance incentives are tied to specific customer service related criteria, which include meeting targets in categories as significant as emergency response and new service connections to the seemingly more banal concerns about the time it takes to answer customer phone calls and customer satisfaction surveys.[97] Two things are significant about the fact that customer service receives the most numerical weight in performance criteria (water quality ranks second at 30 percent). It signals the need for Veolia to remain committed to its consumers, and Indianapolis' recognition that for the partnership to work, consumers need to first consider Veolia a committed local partner, as opposed – perhaps – to a "faceless" international professional services group. In past water partnerships, public relations undermined successes as local consumers, concerned about equity and ownership, opposed the idea of multi-national firms "controlling" their water.[98]

Findings, Observations and Lessons Learned

The most immediate result of the partnership occurred in the firm of a five-year guaranteed rate freeze for water consumers, and a two-year moratorium on staffing

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[96] The Center for Earth and Environmental Sciences, the Indiana University/Purdue University/Veolia Water Partnership: http://www.cees.iupui.edu/Research/Water_Resources/CIWRP/index.htm

[97] Ibid, Exhibit 12: Incentive Free Criteria.

[98] Veolia has an especially turbid history. The company emerged out of a series of corporate contractions and readjustments within the former Vivendi, a large French holding company that oversaw the global operations of firms engaged in water, energy, solid waste, film, and music, amongst others.

reductions. While the former holds, in April 2004 Veolia was no longer bound to keep the roughly 200 non-union employees on staff. Significant tension now exists between both current and former employees (union and non-union) of the utility and the city, largely in response to a public letter sent by Mayor Peterson, announcing the city's intention to solicit bids for the daily operation and management of the system. In the letter, dated July 2001, Mayor Peterson states:

> The city has committed to hiring a professional third party manager to operate the water company efficiently. First, the new management structure will honor all employee benefit agreements including the current bargaining units and the collective bargaining agreements. Your benefits, such as vacation and sick time, paid holidays, medical benefits, life insurance and retirement programs *will not change*. Second, there are no plans for layoffs and no major staff overhauls are anticipated at this time.[99]

Veolia offered, and about 30 have accepted, a buyout option that includes six-months pay. These staff have since departed, including nine members of the engineering department. There are no plans to offer another package, according to Veolia representatives. Non-union employees who lost their pension in the ownership change are now suing the city and Veolia in an attempt to recover $50 million they claim they will lose in benefits over the next 25 years.[100] Opponents feel Veolia has driven away water company veterans whose utility experience is irreplaceable. All of the twelve officers either left before the transaction was completed or are gone now. In June 2004, the company hired Tim Hewitt, who had been president and CEO of the former Indiana Gas Company. He offers no apologies for the company's management style "Nearly all of these employees worked for a regulated utility," he said. "That era ended in May, 2002. These

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[99] Correspondence between Mayor Bart Peterson and Indianapolis Water Company Employees, July 18, 2001.

[100] See http//www.watercompanylawsuit.com for compiled legal resources associated with employment disputes.

employees of the old, regulated utility are working for a for-profit company. There has been a lot of change that has surfaced because of that."[101] The National Labor Relations Board has issued 16 complaints against the company to date.

The partnership is still in its formative stages, and there are few indicators – environmental or financial – to measure the true savings or benefits to the water users. Clearly, taste and odor issues in the drinking water have subsided, but the degree to which this problem could only be solved by Veolia and not the city's own management is debatable. The required commitment of $17,000,000 worth of Veolia's capital does, indeed, provide additional means to improve the situation. Opponents of the partnership tend to point to labor, more than environmental, concerns and a fear that Veolia's employment and labor relations tactics have reduced the "bench-strength" of the system, which could contribute to problems comparable to these experienced in Atlanta, over time. In the design of the contract, it is clear that the city took considerable steps to correct long-term asymmetries between the city and the contractor by insisting on performance criteria, but the resulting unrest between Veolia, the city, and local unions may undermine potential gains in these areas.

[101] See Water Industry News at http://www.waterindustry.org/Water-Facts/veolia-2.htm

Combined Findings, Observations and Lessons Learned (Cases A and B)

In summary, both partnerships offer the following specific lessons:

1. **Privatization efforts must be transparent practices and aim to involve every stakeholder prior to awarding a bid to a private operator.** Local labor unions and environmental groups are likely to feel the most impacted by a municipality's decision to privatize its operations. Engaging these stakeholders early in the decision-making process offers a municipal manager the opportunity to confront and manage transitions in operation or management more equitably.

2. **Performance-based contracts offer greater opportunity to align a private provider's capabilities with a municipality's goals.** Few contracts prior to the 2002 agreement between Veolia and Indianapolis linked performance to incentives, thereby offering the opportunity for a contractor to take advantage of a contract at the expense of the city and its water and wastewater systems.

3. **Water privatizations involve significant transaction costs.** Measuring the true costs of public-private partnerships must account for the ancillary costs and fees incurred by lawyers, transaction teams, consulting engineers and management consultants, hired by a municipality prior to negotiating the contract with a private provider. In sum, these costs can be significant and must be added to the total price of a partnership.

4. **Efficiency gains and savings are often made and the expense of labor or technology.** The "true" benefits of a privatization must be carefully considered as savings may be generated by reducing a large percentage of the workforce or downgrading treatment technologies.

CHAPTER 5. Case Study: Houston, Texas

Overview of the Case

This case study provides an analysis of how the Public Works and Engineering division of Houston's Public Utilities Group decision to enter into managed competition against private sector water and wastewater providers. The Houston experience offers a viable – and ultimately more successful – alternative to public-private partnerships. This case elaborates on the concept of a "competitiveness margin" and addresses how the identification of this margin – through benchmarking and best practices – can lead to considerable internal change within a utility.

Houston grew rapidly in the 1970's to a population of 1.7 million, making it the fourth largest city in America. Its 2003 population exceeds 2 million.[102] The water and wastewater systems grew through annexation and patchwork extension in an attempt to keep pace with population and economic growth along with increasing demands for water service. In the early 1980's, the city began to invest heavily in the construction of new water and wastewater treatment facilities as well. Finally, in 1995, private operators approached city leaders with an offer to operate and maintain the water system at reduced cost. Considering the potential benefits generated from competition from private providers, in 1996 the city initiated a managed competition program, soliciting competitive bids for pre-qualified firms, many of which were multi-nationals. In addition to the bidders, Houston employees participated in the competitive sealed bid process as well. The city's bid – while not the lowest – was chosen in large part because city leaders recognized that the utility group was operating relatively effectively without water quality infractions or

[102] U.S. Census Bureau, *Statistical Abstract of the United States, 2003.* For 2000 Census figures, see Top 50 Cities in the U.S. by Population and Rank, 1990 and 2000.

compliance concerns. In light of this, the city felt that while improvements could be made to the internal operation of the water and wastewater systems themselves, engaging a private contractor could invite labor disputes or add unexpected costs and time delays that could ultimately undermine the Public Works Department's reputation.[103]

Overview of the System and the Network

Houston's utility services include water treatment, water distribution, wastewater collection, wastewater treatment, laboratory services, engineering and planning, and industrial pretreatment. Houston's water utilities – the largest and most comprehensive in the state – produce and distribute over 145 billion gallons of water per year and treat over 90 billion gallons of wastewater. The Public Utilities Group operates and maintains the city's water and wastewater systems over a service area of 650 square miles. The water supply systems consist of a watershed that includes three lakes in two river basins. The system contains four water treatment plants that have a combined capacity of 350 million gallons per day. Groundwater supplied from 200 wells comprises an approximated 40 percent of the average daily demand of 350 million gallons per day. The water is distributed by 100 pumping stations into 5,500 miles of pipeline. The utility group has more than 400,000 connections and serves 2 million people in the greater Houston area.[104]

The wastewater collection system consists of 6,000 square miles of pipeline and 320 lift stations. The system uses three wet weather facilities to manage heavy flows. 52 wastewater treatment plants treat this flow, and the residuals produced by

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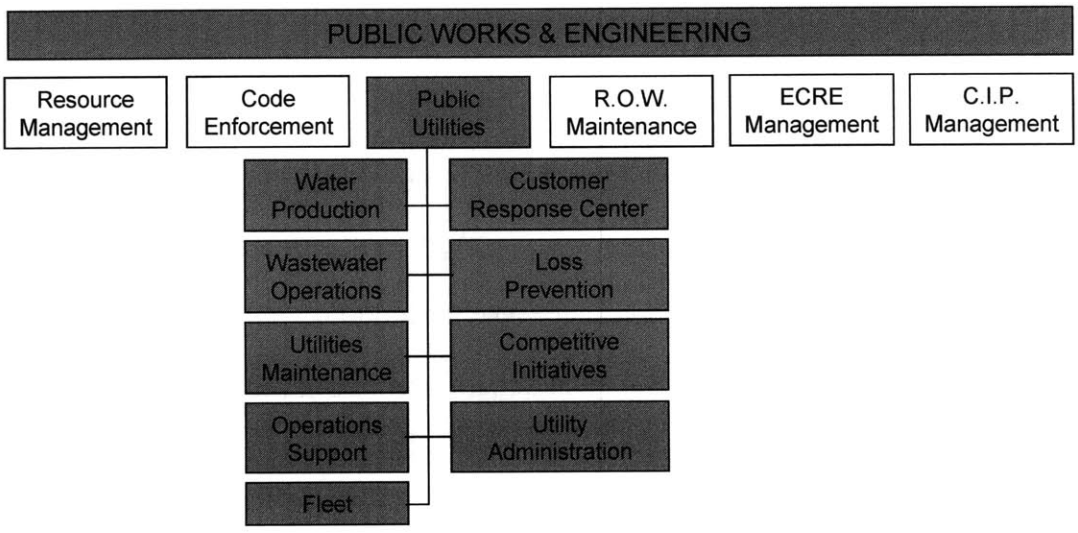
[103] Taylor, Jeffrey; Senior Manager: Houston Water and Wastewater Utilities, telephone interview, April 17, 2005.
[104] City of Houston, Texas; Department of Public Works online: http://www.publicworks.cityofhouston.gov/

the plants are converted into fertilizer which is marketed under the name Houactinite. The annual operating budget of the department, as a whole, is approximately $721 million (including water and wastewater operations). Operating funds are derived from a number of sources including user fees, utility charges and general fund revenue. The department is also responsible for implementing the storm water, street, wastewater and water programs of the mayor's five-year Capital Improvements Plan with a bond-funded budget in excess of $400 million per year.[105] Figure 5.1 presents the organizational structure of the utility group, which is more robust than other municipal utilities in that Houston is such a large city:

Figure 5.1. Organization Chart: Houston Public Utilities Group



Source: City of Houston Public Works Department: http://www.publicworks.cityofhouston.gov/

[105] Bond-funding or "front-end" bond funding municipal infrastructure projects is a commonly used tool to leverage immediate capital. In the water sector, particularly (as compared to toll roads) front-end bond finance offers more financial security than traditional financing and repayment options from user fees, therefore having less effect on water rates.

Pressure to consider a Partnership or Public Reengineering

Houston's decision to consider a restructuring was based largely on an internal assessment of the Public Works and Engineering Division, and a decision to readdress the needs of the water and wastewater operations given population growth and the "patchwork" system expansion experienced by the utility in the previous two decades. The decision to consider a partnership thus arose from the city's sense that its water and wastewater utilities *could* perform more competitively, and ultimately deliver better service, at equal or reduced cost, to its customers.[106] The city's decision was also driven by aggressive marketing of private sector services, and the advent of competition to deliver these services at greatly reduced costs.

Understanding Competitiveness and the Competitive Margin

A competitive process, undertaken by water and wastewater utilities, can be used to establish a foundation of organizational alignment and personnel commitment characterized by long-term strategic thinking and behavior change, often demonstrated by increased staff involvement and incentives to excel professionally.[107] Whereas privatizations are often deemed "quick-fixes" and political windfalls that pad a city's coffers through rapid reductions in the labor force in a relatively short period, a competitive process that ultimately avoids privatization has the potential to deliver sustained results over a much longer time horizon without political disruption. Key differences between an internal competitiveness process and even the best-managed public-private partnerships include the municipality's

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[106] Marcotte, Michael; Director, Houston Public Works Department, telephone interview, March 10, 2005.

[107] Association of Metropolitan Sewerage Agencies (AMSA). *Managed Competition: Developing and Responding to RFQs and RFPs,* (Washington: AMSA Internal Press, 1999), 4.

ability to avoid lengthy contract negotiations at the pre-award stage, its ability to avoid transitioning back to public management at the conclusion or termination of a contract, and not having to retain a dedicated staff of contract managers responsible for oversight and management of the contractor's performance. The competitiveness process for public agencies is akin to a "change management" effort undertaken by private firms that need to redefine their mission or better align themselves with the needs of a shifting clientele.[108]

A critical component of a competitiveness process involves establishing performance measures. Water and wastewater utilities, like many public agencies, are usually good at measuring their "product" (e.g. finished water quality, number of meters read, etc.) but they rarely establish indicators for measuring performance internally. This is partially the result of underlying bureaucratic tendencies in public agencies to manage change proactively. Table 5.1 provides an example of some of the traditional performance measures used to evaluate water and wastewater utilities.

Table 5.1. Water and Wastewater Utility Performance Example Measures

Core Service	Effectiveness	Quality	Efficiency
Water Treatment	Capacity Available	Finished Water Quality	Unit Cost (volume based)
Water Distribution	Reliability of Supply	Interruptions or Unusable Pressure	Unit Cost (volume based)
Wastewater Collection	Capacity or Connection Available	Interruptions or Back-ups	Unit Cost (volume based)
Wastewater Treatment	Waterborne Disease Outbreak	Effluent Quality	Unit Cost (volume based)

Source: Association of Metropolitan Sewerage Agencies, 1999.

After undertaking an internal evaluation of its core competencies, Houston's public utilities managers and senior city officials determined, based on operating and maintenance costs, staffing ratios, and projected future expenditures, that the utility

[108] Association of Metropolitan Sewerage Agencies (AMSA). *Thinking, Getting, Staying Competitive: A Public Sector Handbook,* (Washington: AMSA Internal Press, 1999), 13.

group could perform more efficiently at a reduced cost, perhaps with the help of the private sector. Utility managers and city officials concluded that while it had performed well with respect to external measures (managing water quality or treating effluent to standard, for example), by comparison it paid significantly less attention to the employee groups responsible for these measures. Few staff, for example, had been cross-trained in different core competency areas, despite considerable technological advancements within the utilities group itself. Relegated to performing only within their core competency areas, these employees had little room for advancement or professional development amongst managers or employees.[109] Such conclusions led to the city's decision to initiate the managed competition in 1996.

Managed Competition, Defined

In a managed competition, a public agency bids against private entities for the right to deliver a well-defined package of services over a specified period of time. Often (but not always) the lowest cost bid wins. The process generally includes:

- Pre-competition activities including organizing both a bidding and process management team and communicating with employees, elected officials, labor unions, the general public and other interested constituencies;
- Preparation of competition documents, which typically include both a request for proposals and request for qualifications;
- Pre-proposal activities, such as document review, physical inspections and facilities visits and formal question and answer opportunities;
- A proposal evaluation process leading to a recommendation for selection, and;
- Contract negotiations and transition, where appropriate.[110]

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[109] Marcotte, Michael; Director, Houston Public Works Department, telephone interview, March 10, 2005.

[110] Association of Metropolitan Sewerage Agencies (AMSA). *Managed Competition: Developing and Responding to RFQs and RFPs,* (Washington: AMSA Internal Press, 1997), 6.

No two managed competitions are alike. Some require that all proposals be submitted at the same time. Others ask the public utility to beat the best of the private proposals after all private proposals have been evaluated. The effects of managed competition can be twofold. Managed competition can serve as an opportunity to engage public employees in a process of internal (re)evaluation, to encourage them to "step-up" performance through the threat of private-sector involvement. In most cities, managed affords city employees an opportunity to present a bid alongside private operators. Phoenix, Arizona is often considered to be at the forefront of managed competitions, particularly in sold waste collection and removal. Various city departments in Phoenix have bested private bids over the last decade.[111]

Critics of managed competition argue that, in fact, the city agency often underestimates costs and, consequently, unfairly retains the right to render services. In the process, private firms contend that they have to expend resources and are tricked into providing free insights as to how to improve services. Moreover, critics complain that the winning government bidder does not have to live up to the bid since penalties are rarely assessed if costs exceed the promised level.[112] Conversely, a private sector bidder would lose the contract or would have to absorb higher costs in the form of lower profits or increased losses.[113] Outside of the contract in Atlanta (and including smaller municipal contracts) this claim has not

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[111] For additional information on Phoenix and managed competition in sold waste, see: Franciosi, Robert. "Garbage In, Garbage Out: An Examination of Public-Private Competition in the City of Phoenix," (Goldwater Institute: Issue Analysis 148, 1998).
[112] Scott Edwards, Vice President for Communications: Veolia Water NA. Telephone conversation February 9, 2005.
[113] Seidenstat, Paul. "Emerging Competition in Water and Wastewater Industries," (Philadelphia: Temple University Department of Economics, 2000), 12.

born out. Even the experience in Atlanta does not serve as sufficient proof of this problem, given high degree of uncertainty surrounding the state of the water and wastewater systems themselves, and the rather abbreviated contract negotiation period.

The Change Initiative

Following the decision to retain existing water and wastewater services, the utility embarked on a three-year public reengineering program to streamline operations by changing work practices, investing in new technology, and reducing bureaucratic overhead. The utility group focused on three core areas:

1. **Internal (organizations within the Public Utilities Group):** The utility retained consulting services to assess their competitiveness gap in comparison with other privately run utilities. They sought to change the organization by streamlining work practices, focusing on training, and investing in technology to achieve savings.

2. **External (City organizations that support the utility):** Committees were formed consisting of upper level management to determine ways to improve the efficiency of business practices. The committees focused on changing outdate human resources, procurement and bureaucratic practices, in and among the groups. Programs were developed for skilled base/productivity pay and the use of purchasing cards.

3. **Benchmarking:** Using comparable data from other U.S. water and wastewater utilities.[114]

The first step the general manager of the utilities group took was to hire a change management consultant knowledgeable about the water and wastewater utility field. This external leadership proved valuable as the consultant not only offered knowledge of change management and reengineering methodology, but knowledge of what the private-sector was doing within the utility industry, and what "best

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[114] Association of Metropolitan Sewerage Agencies (AMSA). *Thinking, Getting, Staying Competitive: A Public Sector Handbook,* (Washington: AMSA Internal Press, 1999), 9.

practices" among utilities of comparable size actually were.[115] The process utilized in the change initiative consisted of four phases:

1. Understanding the competitiveness margin;
2. Determining the goals for attainment in the vision of the future;
3. Developing a plan of action of reengineering or adopting new best work practices, and
4. Implementing these practices.[116]

The change initiative began in the wastewater area, then proceeded to the water and utility maintenance area. Understanding the competitiveness gap was critical to the water and wastewater divisions. Benchmarking operations against other public and private utilities allowed utility managers to asses where true savings could be found, and where margins should be retained to meet or exceed safety and regulatory standards.

Summary of Results and Lessons Learned

The opportunities for cost savings in the water, wastewater and utilities maintenance divisions are shown below.

Table 5.1. Savings Generated, Houston Public Reengineering

Division	Dollars Saved Annually	% Annual Savings
Wastewater	$ 9.1 million	9%
Water Production	$ 8.1 million	12%
Utilities Maintenance	$10.6 million	13%
TOTAL	**$27.8 million**	

Source: Houston Department of Public Works, 2005.

City management quickly recognized that cross training and workforce flexibility were essential in improving the competitiveness of the utility group as a whole. Utility managers recognized that cross-training needed to include skill activities, but it also needed to include leadership and management activities so that supervisors and

[115] Marcotte, Michael; Director, Houston Public Works Department, telephone interview, March 10, 2005.
[116] Association of Metropolitan Sewerage Agencies (AMSA). *Thinking, Getting, Staying Competitive: A Public Sector Handbook,* (Washington: AMSA Internal Press, 1999), 19.

mangers could be "part of the program." Houston established a training center to focus on leadership and, skill-based development as well as computer based technical skills for all employees. This training center is fully equipped and fully funded by the city. The commitment to training is obvious to all utility employees.

To date, the results of internal reengineering have been impressive. Overall, the budget for wastewater, water production and utility maintenance was reduced in consecutive years, starting in 1996 with $195 million, $187 million in 1997 then to $175 million in 1998. The overall staff was reduced from 2,147 in 1995-1996 to a present 1,800 within the greater utilities group. All staffing reductions, moreover, were accomplished through attrition. Budget reductions were accomplished without a reduction in service, or an increase in the number of regulatory violations. In addition, the number of connections and the number of water lines and sewer lines maintained increased each year.

In comparison with the privatization efforts in Atlanta and Indianapolis, the managed competition process in Houston can be seen as a "win-win" endeavor. It is important to note that while the city entertained the opportunity to retain a private contractor, in stark contrast to management in Atlanta and Indianapolis, it did not conclude prematurely that efficiencies gained by the contractor could be any more significant than those achieved under the utility's existing structure. Senior utility management in Houston stress that "big-picture" decisions by public utilities should not be made quickly. Utilities have, historically, been slow to respond to change, and public agencies are generally more risk-averse than their private sector counterparts.[117] Houston deliberated for a considerable amount of time about the

[117] Taylor, Jeffrey; Senior Manager: Houston Water and Wastewater Utilities, telephone interview, April 17, 2005.

best-approach for future management of its water and wastewater utilities, and concluded that a managed competition could provide interesting insight, but no binding guarantee, on how the future management of the utilities might best be handled. The managed competition and public reengineering processes in Houston represents one of rational decision making; city managers clearly evaluated the opportunities at their disposal without making hasty decisions. The degree to which every city can do the same, however, is uncertain. Anecdotal evidence from industry experts suggests that Atlanta's senior management was "backed into a corer" – forced to make quick decisions about its utility management by EPA, State regulators and private firms alike.[118] Houston, on the other hand, benefited from good water quality, sustained regulatory compliance and did not have an overtly pro-privatization mayor or city manager pushing a privatization agenda. If evaluated from a risk-management perspective, moreover, the city felt comfortable retaining 100 percent of the risks associated with providing water and wastewater services in-house, and uncertain that either a risk transfer or long-term benefit accrual would actually occur under private management.

An analysis of the numbers affirms this. Annual savings of nearly $30 million are significant under any circumstance, and amount to almost three times those generated by United Water during their four-year tenure in Atlanta. More significant, perhaps, are the reductions in workforce, which took place without any union disputes or intervention. The estimated costs of the managed competition, which included retaining outside consultants to assist in the bidding process and the

[118] Eisenhardt. Paul; President and CEO, The Eisenhardt Group, telephone interview, February 14, 2005.

subsequent change-management process are between $300,000 and $500,000.[119]

AMSA recognized the Houston Public Utilities Group with a "best in class" award in 1998, citing it's 14 percent reduction in annual overhead and maintenance costs. Chemical costs at the surface water plants were reduced at the same time the utility was adopting the stringent turbidity goals of the Partnership For Safe Water.[120] Electrical costs remained relatively constant in a rising rate environment. These efficiencies were achieved while maintaining the quality of water and service delivered to customers. Achievement of this goal was evidenced by a 99.8 percent customer satisfaction rating throughout the period. The Water Production Branch has become tremendously cost competitive within the industry and is now in the second phase of its competitiveness program. Houston's city mangers point to the following four considerations that they concluded were crucial in determining whether or not to retain public management and operations or offer a service contract to a private provider:

- **Commitment to Improvement.** Based on the findings of its self-evaluation, the utility seeking improvement must identify and commit to improving those areas in which the highest standards of service, safety, and efficiency are not currently met.

- **Staff and Community Support.** If the utility needs to change, it must be led by a champion at a high level who has the full support of the governing body. A far-seeing manager will encourage staff participation at all levels to develop and implement a plan. The public also must be involved in this movement for change in order to win their approval and support.

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[119] Taylor, Jeffrey; Senior Manager: Houston Water and Wastewater Utilities, telephone interview, April 17, 2005.

[120] The Partnership for Safe Water is a cooperative effort between EPA, American Water Works Association, Association of Metropolitan Water Agencies, National Association of Water Companies, and Association of State Drinking Water Administrators. The Partnership encourages and assists United States water suppliers to voluntarily enhance their water systems performance, for greater control of Cryptosporidium, Giardia and other microbial contaminants. See: http://www.epa.gov/safewater/psw/psw.html

- **Long-Term Outlook.** The water supplier's governing body must recognize that a long-term outlook is critical if the utility is to become more efficient. At first and perhaps for a period of several years, there may be resistance to change and necessary investments required to ensure more efficient use of resources and personnel in the long run.

- **Role of Technology.** Public water suppliers and their governing boards must be open to the creative use of technology, especially in instrumentation, operations controls, computing and communications, and modernization of labor and maintenance-intensive equipment.[121]

The sustained successes of the managed competition and public reengineering programs in Houston fly in the face of the private sector's claims that only privatization can achieve significant cost savings. While United Water's failure in Atlanta can be touted as evidence of poor private-sector performance, efforts comparable to Houston's – which have also taken place in Colorado Springs, Los Angeles and other cities – provide significant evidence that a commitment to change, coupled with progressive public management can exceed results promised by private providers. Mike Gritzuk, formerly the director of Phoenix' Water Services Department recently reaffirmed this stating "privatization doesn't even begin to address the scope of what a public re-engineering project can address."[122]

Just as a municipal public-private partnership takes a political "champion" to get, and then keep, privatization on the agenda, a public reengineering process requires enough foresight to willingly conclude that utilities can make measured gains over a long period under public management. Whereas privatization may be seen as a quick fix, public reengineering is just the opposite. It is a slow, more deliberate process focused on sustained change over time. More importantly, public

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[121] Marcotte, Michael; Director, Houston Public Works Department, telephone interview, March 10, 2005.
[122] Gritzuk, Michael; Director, Phoenix Water Services Department (retired), telephone interview, February 17, 2005.

reengineering reaffirms the public commitment to critical service delivery and resource management, and helps other public entities better choose the appropriate method of long-term resource management.

"Bid-to-Goal" and the Evolution of Public Reengineering

Senior city officials and utility/public works division managers drove the change initiative. That is, unlike the privatization efforts in Indianapolis and Atlanta, no single "champion" emerged in favor of (or in opposition to) the reengineering process. In most respects, city officials relied on the assessment of the senior utility managers as to how the "finished product" of the utility group (effluent quality) measured up and collectively drew some conclusions about the utility management.[123] The group was careful to evaluate the potential benefits offered by private sector bidders against its current operation, and concluded that many of the private firms offered enticing enough opportunities for savings to allow them to compete for the management contract. Evaluated comprehensively, however, the city concluded that it could always exercise the option of engaging the private sector at a later date (and perhaps evaluate its performance in other cities first) and therefore declined the opportunity to relinquish complete operation and management control.[124]

While there was little public involvement in the process, the reengineering process itself afforded many of the utility employees to engage in and drive some of the decisions, particularly regarding training opportunities. Of all stakeholders, employees have the most to gain, and lose, from a managed competition and public

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[123] Taylor, Jeffrey; Senior Manager: Houston Water and Wastewater Utilities, telephone interview, April 17, 2005.
[124] Marcotte, Michael; Director, Houston Public Works Department, telephone interview, March 10, 2005.

reengineering practices. City managers in Houston recognized the importance of employee input, and solicited advice and programmatic-design input from many of the utility group's employees. As a result of these inputs, incentive-based programs tied to certification levels within different departments were added, which coincided well with technology upgrades. The utility group committed to investing much of the generated savings from the reengineering back into technological upgrades, which, in turn, afforded retained employees the opportunity to advance professionally through skills development. Perhaps the best measure of success in Houston's program is in its replication in San Diego, under the new name "Bid-to-Goal."

In 1998, San Diego's Public Utilities Group implemented a "Bid-to-Goal" program that generated cost savings of $53 million in four years. The process involves applying mutually acceptable administrative rules and labor agreements modeled on the desirable aspects of private contracts. These include detailed descriptions of scope, competitive budgets (based on independent mock bids performed by private-sector firms), gain sharing incentives for performance and default provisions allowing for immediate privatization if performance measures are not met.[125] "Bid-to-Goal is one of the most important public-sector optimization advancements since managed competition," according to Gowher Rizvi, Director of the Institute for Government Innovation at Harvard University's John F. Kennedy School of Government. "It has proven impressively that public employees can deliver services at the same quality and cost levels as private industry."[126] The city's wastewater department is also the first public utility to achieve ISO 14000

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[125] See: http://www.govpro.com, "Bid-to-Goal Procurement Program Up for Award," date unknown.

[126] See The Council for Excellence in Government, "San Diego's Pioneering Bid-to-Goal Procurement Program is a Finalist for Prestigious American Government Award," as extracted from: http://www.excelgov.org/displayContent.asp?NewsItemID=3510&Keyword=m2001

certifications. San Diego's Bid-to-Goal program can be seen as the maturation of Houston's public reengineering practice, and associations like AMSA and AMWA, and labor groups such as AFSCME – usually the most hesitant or resistant to advocating for public-private partnerships – promote the Bid-to-Goal process as one that can be replicated, and improved upon, in other municipalities.

Findings, Observations and Lessons Learned

Three key findings from the case study in Houston are noted below:

1. **Managed competitions spur competition and offer public sector employees an opportunity to make changes in utility management on par with those offered by the private sector.** In Houston, the threat of privatization provided incentive to utility employees to take part in process that would directly impact their professional futures. By not privatizing the water and wastewater systems, many of Houston's utility employees were likely spared their jobs and, at the same time, offered opportunities to advance their careers through training and better management systems.

2. **Managed competitions and public reengineering efforts are not "silver bullets," however.** Experiences in Houston and Sand Diego suggest that utilities are better able to take advantage of a variety of efforts to make gains and improve upon their core services, but there is no guarantee that similar efforts – and similar results – can be duplicated in cities experiencing many of the same pressures or problems with their water systems.

3. **"Savings" remain uncertain and difficult to define, even under public reengineering.** While Houston's utility management was diligent in its efforts to recognize and apply savings made in the reengineering practice, there is no guarantee that (a) savings in excess of what the private sector might offer can in fact be achieved and (b) recognized savings will be reapplied to the water and wastewater systems.

Houston's effort to keep it operation and management services "in house" can be considered laudable considering the privatization environment of the mid-1990s and the uncertainties associated with turning management control over to an untested private provider. Yet one should cautiously consider the long-view of Houston's experience, and of similar experiences in cities like San Diego. Change management processes offer no "bulletproof" guarantee that the municipality undertaking utility reform will, in fact, reapply any savings to the water system itself

or approach employee redundancies any differently than might otherwise occur during a management transfer.

Thus, public reengineering practice therefore offer only the guarantee that a privatization can be avoided temporarily, but provide no certainty that a new city manger, mayor or utility manager might later chose to contract with a private provider. The true "benefit" derived from the experiences of Houston, therefore, is the advent of a competitive environment the emerges from the managed competition itself – one that applies pressure to a utility to perform better under the threat of wholesale change to the utility or set of utilities with a public works department.

CHAPTER 6. State of the U.S. Water and Wastewater Sectors

What do the experiences in Atlanta, Indianapolis and Houston say, generally, about the U.S. water and wastewater sectors? Evaluated together, the case studies suggest – at the very least – that some of America's largest cities have begun to look more carefully at the composition of their water and wastewater networks. From an historical perspective, this should be considered progress; perhaps the "out of sight, out of mind" approach to utility management is withering under the technical burdens and financial mandates of regulatory compliance that require closer attention. The "business as usual" scenario of water management, whereby the decisions *about* water management are left to those in charge of utilities, no longer seems to hold true either. Furthermore, each case study offers some insight into the fact that considerable problems (some local, some universal) have emerged as infrastructure ages, cities grow and populations apply pressure on water and wastewater systems.

Clearly, the private sector's presence as an operator and manager suggests that at least some believe the public sector falls short in managing public goods, or can no longer be trusted to deliver the highly technical services required of modern resource management. Yet the cases also present troubling evidence that private sector firms, and the contracting mechanisms for engaging the private sector, can be inadequate, poorly composed (or both) to effectively meet municipal water and wastewater service needs in a given city. Consider further the following three issues confronting the U.S. water sector:

1. The critical need to replace or repair aging or aged infrastructure;
2. Artificially low cost of water and sewer services; and
3. A steady decline of federal investment in water and wastewater infrastructure.

These are not, nor should they be, problems that the private sector can solve – they require tremendous capital commitment and sustained input from key public decision makers. They are, nonetheless, the root causes of uncertainty in the sector today and undoubtedly the reason why multi-national firms are competing for a share of the U.S. market. Collectively, they contribute to an aggregate financing gap that places a tremendous and sustained burden on public utilities. In understanding these issues, however, we might better understand the motivations of private sector firms in leveraging profit from a changing – and somewhat unstable – sector.

The Infrastructure Financing Gap

The combination of a reduction in federal and state funding for infrastructure improvements, the demonstrated need for rehabilitated or new infrastructure, and the increased competition for municipal funds amongst various municipal agencies (as defined in previous chapters) has led to a funding gap for water and wastewater infrastructure. A funding gap means, simply, that the aggregate capital needs for water and wastewater infrastructure exceed the available capital from traditional sources, principally the federal government and local municipalities. Current capital spending for clean water (e.g. on wastewater infrastructure and ancillary services) is estimated at $13 billion per year and $10.4 billion per year for drinking water infrastructure.[127] While estimates for the total capital investment necessary to maintain the nation's infrastructure over the next 20 years vary, depending both upon the determinants used to assess debt financing and growth for example (such as interest rates and municipal growth projections) and the organization making the projections, all are significant. The most widely accepted estimates have been

[127] USEPA, "The Clean Water and Drinking Water Infrastructure Gap Analysis." EPA 816-R-02-020, 2002. Washington, DC: US Environmental Protection Agency.

generated by the U.S. Environmental Protection Agency (EPA), the Water Infrastructure Network (WIN) and the U.S. Congressional Budget Office (CBO). EPA, for example, estimates a total 20-year investment need of approximately $220 billion for water systems and $150 billion for wastewater systems.[128] According to the EPA estimate, the greatest share (56 percent) of these costs is for transmission and distribution, followed by treatment (26 percent), storage (9 percent), source water development (8 percent) and other needs (1 percent).

The CBO and WIN estimates each draw, at least in part, from the USEPA's *Drinking Water Infrastructure Needs Surveys* and *Clean Watersheds Needs Surveys* which are released every two years and presented to Congress. These studies serve as the basis for allocating funds from the Drinking Water State Revolving Loan Funds (DWSRF's) and Clean Water State Revolving Loan Funds (CWSRF's). Both studies report data from the 20-year anticipated infrastructure improvement needs of 4,000 public water and wastewater systems of various sizes. EPA's estimates are generally the most conservative of those groups that have produced estimates, as they do not incorporate any estimates that are not supported by documentation from the utilities, nor do they account for needs associated solely with future growth.[129] The calculations used by the different organizations to estimate future capital investment in water and wastewater infrastructure, operations and maintenance costs, and to determine the total funding gap described above are explained in greater detail in Appendix A.

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[128] USEPA, Office of Water, *Drinking Water Infrastructure Needs Survey: Second Report to Congress,* EPA 816-R-01-004 (February 2001), *United States Environmental Protection Agency Clean Watersheds Needs Survey: Report to Congress,* (February 2000) and The Water Infrastructure Network, "Water Infrastructure Now: Recommendations for Clean and Safe Water in the 21st Century, 1999".

[129] Unless otherwise noted, estimates used in this chapter are drawn from EPA estimates.

The Replacement Era

The U.S. drinking water infrastructure network spans more than 700,000 miles, more than 4 times the length of the national highway system. The country's public wastewater network is comprised of nearly 16,000 treatment facilities, roughly 600,000 miles of publicly-owned pipe and treats and discharges the waste of over 200 million people.[130] In many cases, particularly in larger cities, components of these systems (such as the water mains) are more than a century old. The oldest cast iron pipes, dating to the late 1800s, have an average life expectancy of 100-120 years. Because of changing materials and manufacturing techniques, pipes laid in the 1920s have an average life expectancy of nearly 100 years, and those laid in the post-World War II boom are expected to last about 75 years. Moreover, many older water distribution systems used lead pipes to distribute tap water.

Municipalities first installed lead pipes during the late 19th Century. In 1897, about half of all American municipalities used at least some lead water pipes. Lead had two features that made it attractive to the engineers who designed public water systems: it was both malleable and durable. Malleability reduced labor costs by making it easier to bend the service main around existing infrastructure and obstructions, and compared to iron, lead was a soft and pliable metal. As for durability, the life of the typical lead service pipe was considerably longer than plain iron or steel, galvanized, or cement lined pipe. Based solely on engineering concerns, these characteristics made lead an ideal material for service lines. From a narrow engineering standpoint, it is clear that lead worked well, when one examines how popular lead service lines were. At the turn of the 20th Century, the use of lead

[130] USEPA 2002. "The Clean Water and Drinking Water Infrastructure Gap Analysis." EPA 816-R-02-020. Washington, DC: US Environmental Protection Agency.

pipes was widespread, particularly in medium and large cities.

However, the use of lead pipes has had public health implications. Studies show that ingested lead can have adverse neurological, toxicological, and developmental effects on humans, particularly children.[131] The age of pipe influenced lead content because, over time, oxidation formed a protective coating on the interior of pipes. As for corrosiveness, acidic water leached more lead from the interior of pipes than did non-acidic water.

Over time, the public health implications of lead pipes became better understood, and other materials were used in their stead. Today, most lead pipes have been replaced with more modern and safer materials, although some cities still have some areas with lead service lines to older buildings and lead-containing packing materials used to seal joints between some pipes. Chicago is reported to have the highest concentration of lead pipes in the nation and lead service lines also remain in some areas in the District of Columbia.[132] The presence of lead materials in water systems is significant because the water passing through lead service lines and joint packing materials could be corrosive, thereby leaching lead from the lines and packing materials and increasing lead levels in the drinking water.

Lead pipe replacement, corrosion and water loss are just a few of many rehabilitation issues that most utilities across the country have already, or will soon have to confront as the country enters into what AMSA recently deemed the "dawn of the replacement era."[133] Water loss is of particular importance as pipes continue to age. Urban systems typically lose 10 to 15 percent of their produced water,

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[131] See for example: USEPA Information regarding lead in drinking water at, http://www.epa.gov/safewater/lead/

[132] See for example: DC Water and Sewer Authority at http://www.dcwasa.com/lead/faq.cfm

[133] American Water Works Association, Reinvesting in Drinking Water Infrastructure: Dawn of the Replacement Era (Denver, Colorado: AWWA, May 2001).

although some systems in geologically unstable areas have reported losses near 50 percent of their produced water (these figures usually represent a combination of actual losses because of leaks and accounting losses because of metering).[134] The problem of water system losses grows as these systems age. Water losses translate into higher costs and foregone revenues, and also jeopardize the safety and reliability of water service. Replacement costs also far exceed original installation costs even when stated in comparable dollars. How municipal governments fund these capital expenditures will certainly play an important part in the scope and pace of private involvement in the water industry. Table 6.1 illustrates the anticipated capital improvements for the country's largest systems.

Table 6.1. Costs of Needed Capital Improvements to Drinking Water Infrastructure for the Top 10 States by System Size[a,b]

State	Large Systems	State	Medium Systems	State	Small Systems
California	$12310.8	Texas	$3691.7	Texas	$2655.1
New York	$ 9305.0	Massachusetts	$2998.8	California	$2204.4
Texas	$ 6684.2	California	$2896.7	New York	$1739.0
Michigan	$ 3647.1	Illinois	$2738.6	Pennsylvania	$1375.0
Massachusetts	$ 2628.4	Ohio	$2096.7	Illinois	$1306.2
Florida	$ 2163.1	New York	$2015.4	Washington	$1256.5
Illinois	$ 2020.8	Pennsylvania	$1946.5	Ohio	$ 957.5
Pennsylvania	$ 1722.1	Michigan	$1919.3	Florida	$ 910.2
New Jersey	$ 1721.7	Iowa	$1800.3	North Carolina	$ 908.5
Ohio	$ 1689.9	Minnesota	$1498.5	Missouri	$ 881.4

[a] Large Systems:>50,000 customers, medium systems: 3301-50,000 customers; small systems: <3,300 customers
[b] Costs reported in millions of January 1999 dollars
Source: EPA, 2001

Regulation and Pricing Asymmetry

Ineffective pricing and regulation have also distorted consumer expectations and utility managers' decisions about rehabilitation and replacement needs of water systems, and can therefore be seen as major contributing factors to the current and

[134] USEPA 2002. "The Clean Water and Drinking Water Infrastructure Gap Analysis." EPA 816-R-02-020. Washington, DC: US Environmental Protection Agency, ix.

projected financing gap. Regulation and pricing imbalances underpin the discourse on energy and telecommunications deregulation, but the characteristics of the water sector offer few opportunities to approach change in the same way as the energy and telecommunications sectors.

Regulation of water systems reflects the U.S. system of federalism or shared responsibility for governance. All water systems are subject to regulation by state and federal agencies pursuant to the Safe Drinking Water Act and The Clean Water Act. Systems must, at a minimum, meet federal standards, but states can impose additional standards. States have primacy with respect to water quantity regulation, including regulation of withdrawls and diversions. Interstate, state and regional authorities can also exert significant influence. Examples include the Delaware and Potomac River Basin Commission and the Florida Water Management Districts.

Much of the criticism of the U.S. water model of regulation, which emphasizes ratebase, rate-of-return (RRR), and rate design determinations, focuses on issues related to incentives. The system is not entirely without incentives, and underperforming utilities will not earn their authorized rate of return. State public utility commissions in the United States apply a ratebase/rate-of-return method of economic regulation, whereby they contemplate the value of assets on which a return can be earned (the ratebase), the authorized (but not guaranteed) rate of return to recover capital costs, and the allowable operating expenses for the utility. Once the utility's total revenue requirements are established, regulators also approve the prices that can be charged to various classes of utility customers (the tariff).[135]

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[135] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 84.

Water rate structures, similar to other utility rate structures, are based on the concept of averages, that is, a customer with an average maximum day demand. The design of customer classes extends the averaging concept to customers within classes (indicating that the average customer differs among different customer classes). However, many customers in any specific class have different load factors (the ratio of average demand to maximum demand) and different maximum demands. Thus, whether the water utility has one general class or several customer classes, the result is an element of price discrimination and cross-subsidization – rates never perfectly match the cost of service to specific customers within the general class or within specific customer classes.

As a result, water and sewer rate inequalities contribute significantly to the financing gap. Household charges for water and sewer are one of the most politically sensitive and "charged" issues for city managers and elected officials. Economists generally agree that water and wastewater services are underpriced, but few politicians are willing to threaten their political clout by proposing dramatic price increases to help cover the true costs of rehabilitation or needed investment in municipal water systems. More generally, underpricing of water services is a function of several factors, including the use of historical accounting (rather than present or future) costs in the rate-setting process, and the use of average (rather than marginal or incremental) cost as the primary pricing standard. By employing inappropriate cost criteria for water supply, these measures lead to distorted resource allocation decisions, including increased water usage, which places additional stress on system capacity and maintenance.

As demonstrated in the case of the Indianapolis water and wastewater systems, engaging Veolia and United Water ensured a five-year rate freeze for

municipal water consumers and kept sewer rates steady at their 1995 amounts. On the surface, these were both very appealing options for consumers and politically advantageous outcomes. The examples in Indianapolis should, however, be considered as evidence of a dangerous myopia on the part of city managers and politicians. Contracting with a private provider suggests, however, that political leaders overstate the near term value of money and discount significantly the long-term opportunity of retaining full public control of water and wastewater systems and ancillary services. Further, a five-year rate freeze provides no guarantee of rate stabilization in year six, or beyond.

Indianapolis was also able to effect savings through United Water's decision to switch from a high-cost treatment technology (ozone) to the lower-cost of chlorination. In doing so, sewer rates remained frozen at their 1995 amount. In two studies on consumer attitudes conducted by the American Water Works Research Foundation in 1993 and again in 1998, price was a considerably *less* important concern than reliable and safe water, however. The results of the survey are presented in Table 6.2 below:

Table 6.2. 1993 and 1998 Consumer Response Survey

1993 Responses	1998 Responses
Most customers were willing to pay the cost to meet federal standards, and most were willing to up to $10 per month more for water that exceeded federal standards; and	To customers, getting water that is safe, aesthetically pleasing and reliable was 10 times more important than "reasonably" priced water
Customers rank clean, safe and healthy and good quality water three to five times more important reasonably priced water, and only 6 percent of the customers list reasonable price as their top priority	Customers' first priority was in having an uninterrupted supply, significantly lower in priority was affordability

Source: AWWARF (http:awwarf.org), 1998

A complicated set of objectives nevertheless underlies public water utilities rate making efforts, and utilities generally design retail service rates with two main goals in mind: (1) revenue stability – the amount and reliability of sales revenue

collected and (2) equity – the degree to which customers bills reflect the cost of their relative service requirements. A third goal, conservation pricing, has emerged in recent years as another important goal in water rate design. Water utilities have found an uncomfortable tension between these three main goals, because greater equity and especially conservation signals often cause increased revenue volatility. Limited public funding and the achievement of economic efficiency mean, moreover, that the cost of infrastructure improvements must be supported through rates.

How might future costs of investment in water infrastructure and of operations and maintenance affect household budgets? The Congressional Budget Office estimates that in the late 1990s, total household bills for water and wastewater services combined represented 0.5 of household income nationwide. By their projections, household water bills will account for 0.6 percent of national household income under conservative estimates and nearly 1 percent under a more aggressive scenario.[136] Given EPA's suggestion that water costs should be 2 percent of household income, it is clear that water is subsidized well over 100 percent. A recent study by Raftelis Environmental Consulting shows that average U.S. utility prices for drinking water range from a low of 0.007 cents/gallon to 0.042 cents/gallon, with an average of 0.017 cents/gallon.[137] Cities and private providers alike will increasingly have to consider how to price services to ensure equity, and how to respond to delinquent accounts. Unlike cable TV or cellular telephone

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[136] The Congress of the United States. "Future Investment in Drinking Water and Wastewater Infrastructure," A CBO Study, Washington DC, 2002, 12.

[137] Raftelis Environmental Consulting, 2000 Water and Wastewater Rate Survey, in EPA's "Water and Wastewater Pricing: An Informational Overview;" it should also be noted that these are national averages and therefore do not reflect effects on low-income residents.

service, the consequences of "shutting off" services are more severe for consumers. Whether or not the private sector – as operators and mangers but not owners of public water and wastewater systems – can influence policies and force cities to reconsider rate increases remains to be determined.

Federal and State Funding Programs

Except as a builder of dams and other major public works used to supply water, the federal government played a relatively minor role in funding or regulating local water systems before 1972. The Public Health Service had published drinking water standards as early as 1914, and updated them in 1925, 1946 and 1962, but those standards were federally enforced only for the water supplies of interstate carriers. Matching grants for 30 percent to 50 percent of the costs of constructing wastewater treatment facilities became available in 1956, but initially the amount of funding was small and there were no federal requirements for such facilities.

With the passage of the Federal Water Pollution Control Act Amendments of 1972 (later, the Clear Water Act), Congress adopted the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters, thereby ensuring that they would be fishable and swimmable.[138] Toward that goal, the legislation established a requirement that municipal wastewater discharged to surface waters be given secondary treatment, increased the federal matching share to 75 percent for constructing publicly owned treatment works (POTWs) and greatly expanded the amount of available funding. Consequently, federal outlays for

[138] See: USEPA Clean Water Act (http://www.epa.gov/region5/water/cwa.htm).

wastewater treatment grants rose tenfold in real (inflation adjusted) terms during the 1970's, reaching a high of $9.1 billion (in 2001 dollars) in the 1980's.[139]

The expansion of aid was seen as a temporary infusion of capital to allow POTW's to construct secondary treatment facilities – and, indeed, funding has declined sharply since its real peak in 1980. In 1981, amendments to the Clean Water Act cut the authorization for wastewater grants in half and reduced the federal matching share to 55 percent for facilities built after 1984. Then, in 1987, legislation was enacted to phase out the construction grant program by 1991 and replace it with a period of grants to capitalize on state revolving funds, with the states matching 20 percent of each federal dollar.

The government's primary involvement with drinking water began with the Safe Drinking Water Act in 1974. Among the factors leading to its passage were concerns that the Public Health Service's drinking water standards were based on inadequate and obsolete data, that state and local officials were not adequately monitoring water systems, and that pollutants found in drinking water were carcinogenic. EPA issued few standards for drinking water contaminants in the law's first decade, and the Congress amended it in 1986 to require the agency to develop standards for 83 specified contaminants and for 25 others every three years. As amended, the law called for the standards (maximum contaminant levels or MCLs) to be set as close as feasible to levels at which no adverse health affects were know or anticipated – taking cost into consideration in defining feasibility. EPA considers a standard feasible if the cost of meeting it is "reasonable" for a large water system.

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[139] The Congress of the United States, "Future Investment in Drinking Water and Wastewater Infrastructure," A CBO Study, Washington DC, 2002, 6.

Early results of federal aid for water and drinking water infrastructure were indeed impressive; communities nationwide enjoyed higher levels of effluent treatment and noticeable decreases in public waterway pollution. By all accounts, the early construction grants and influx of federal dollars had accomplished their immediate goals, and water and wastewater infrastructure funding reverted to local communities. The key question now is, "have we invested enough as a result of the of the slow federal withdrawal from financing wastewater infrastructure in the 1970s, 1980s, 1990s and thus far into the 2000s?" The gap, as briefly described above, suggests we have not, and that local communities are bearing the costs and associated burden, while the private sector aims to exploit this gap to advantage their bottom-lines. Top-down federal solutions therefore remain an important priority in both sectors.

Federal Imbalances and Federal Solutions: Looking Beyond the Private Sector

The case for increased federal investment in water-related infrastructure is compelling. Needs, as demonstrated in this chapter, are large and unprecedented. Yet federal support for water systems can also have unintended and negative consequences, such as a reduction in comparable spending by state or local governments. Evidence from the federal wastewater construction grants program under the Clean Water Act suggests that large increases in federal aid can lead to significant displacement. Between 1970 and 1980, federal support for wastewater plants rose by about $8.2 billion, but state and local funding fell by $1.9 billion, effectively negating about one-quarter of the federal increase.[140] A second unintended consequence of federal aid for investment projects is that it distorts price signals for system managers – and thus affects their decisions about such things as

[140] Ibid, 9.

preventative maintenance, construction methods, treatment technology, pipe materials and excess capacity – and for ratepayers, affecting their decisions about usage. The overall affect is to undermine the cost-effective provision and use of water services.

Yet promoting private-sector solutions does more to exacerbate than solve these problems. The emergence of the private sector – and by extension, the advent of competition – has disengaged the federal government further from investment opportunities. Public utilities have further contributed to this withdrawal by having varied and specialized needs. Whereas funding and subsidies for the nation's highway infrastructure, major airlines and railroads have increased in the last two decades, federal contributions for water and wastewater have declined. The reason, in part, is because it is extremely difficult to quantify aggregate positive results generated from investments to one or two "problem" utilities. Coupled with the fact the private operators have a strong and unified lobby as compared to disparate and localized utilities, many feel that key public decision makers have concluded that induced competition can contribute to large over-all savings internal to utilities themselves which can then be reinvested in a particular water system.

Instead of reducing federal funds because of these distortions, federal funds should be redistributed more effectively. For example, the government could adopt a formula that does not involve a system's current investments or activities and thus does not distort the marginal costs seen by system – or city – management. Accounting instead for factors relating to a system's size (such as miles of pipes and investment spending over some fixed historical period), investment needs (average age of pipes and treatment plants) and local financial capacity (such as the population and average income of the service area) would likely have the effect of

redistributing revenue without undermining a manager's incentives for cost-effective choices.

Still another way to limit the negative incentives of increased federal support for water systems is to target the aid. The fewer systems eligible for aid, the smaller the undesired consequences. Aid could be given to systems facing high costs (relative to population served or relative to the aggregate income of the population served) for investment (or investment and O&M) in general or for narrower categories of cost, such as those to comply with federal regulations or to maintain or replace investments "stranded" by population shifts. While these options for redirected federal assistance would not likely discourage well functioning public utilities – such as those in Indianapolis – to consider long-term private sector contracts, they would likely impact cities such as Atlanta with systems that have suffered disproportionately in the same relative time period.

Not surprisingly, the private, investor-owned water industry and private operators of public utility systems generally oppose a major program of federal grants to fund municipal utility infrastructure. Their position was stated at a water investors conference in April 2001 by Peter Cook, Executive Director of the National Association of Water Companies: "The larger the federal role the more counter-productive it will be."[141] While a federal trust fund for water may undermine profits of private water providers, it must be recognized that it is also the strongest solution to many of these problems.

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[141] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 19.

CHAPTER 7. Findings and Observations

The underlying intent of this thesis has been to discern how the presence of private sector participants might effect changes – both positive and negative – in the U.S. water and wastewater sectors. More specifically, the previous chapters explore a relatively small component of the larger "privatization trend" in the water sector and address some of the principle reasons why long-term operation and management contracts may not be suitable substitutes for sustained public management of water and wastewater utilities. While there is not sufficient evidence to suggest that the length (e.g. 20-years) of a management agreement is the determining factor in cases that can be considered "bad" privatizations, it is clear that the structure of a particular agreement, combined with the political motivations of key public decision makers, often are in direct conflict with one another and undermine the sustainability and success of long-term contracts.

That is, politics are the common thread that running through each case study, and it is therefore worth noting the degree to which privatizations in the U.S. water and wastewater sectors can become "politicized" events. While it would be impossible to disassociate decisions about water and wastewater management and planning from the larger politics of a city and political agenda of a city manager, the greatest disconnect between a municipality and private operator can often arise as a result of a political decision-maker's inability to think or act beyond his or her tenure in public office. The case studies indicate that senior city officials go to great lengths to ensure the private operator is well protected during its tenure, evidenced by Mayor Goldsmith's attempt to have the Indiana Department of Environmental Protection relax water quality standards, thereby ensuring WREP a wider margin of error for

potential permit violations. Political agendas also differ, and a public-private partnership can only be considered effective and sustainable if pure political motivations are disaggregated from the long-term goals of a contract. With so much money at stake, however, it is impossible to assume that personal political motivations can be entirely "sidelined" for the sake of the city's benefit, however. Five other key lessons can be taken from the previous case studies and chapters as well:

1. Public-private partnerships are highly political and require political "champions" to get and remain on a city's agenda.

2. When excluded from the decision-making process about water service provision, the public may be skeptical of private sector providers (and particularly multi-national firms) and does not draw distinctions between the terminological nuances of "public-private partnerships" and "privatizations."

3. Public decision makers (e.g. mayors and city managers) often do not disassociate water services from other municipal services, despite the unique composition and capital intensity of the industry and the critical nature of the service provided.

4. Environmental protection and natural resource stewardship (taken in the broad context of such concepts) are usually *not* the driving factors in public-private partnerships.

5. "Savings" – often the underlying objective for city mangers and mayors – are difficult to define, even harder to guarantee and often come at the expense of water quality, public health and safety or employee guarantees.

Three of the four case studies presented in the previous chapters (Atlanta and Indianapolis water/wastewater) also suggest that considerable information asymmetry, combined with multiple and often divergent public and private sector agendas have the great potential to disadvantage communities and undermine efforts to enhance public heath or promote economic development over time. Evidence from Atlanta and Indianapolis also prove that engaging private firms offers

little assurances that municipal costs can be sufficiently reduced to generate sustained benefits for local communities and consumers, that effluent quality can improve or, more generally, that consumer values are held "in check" over the course of a contract when a public entity engages a private manager for water-related services. Of greatest concern, however, is the degree to which a public manager's willingness to "test" the market undermines the ability of the public sector to reform and improve from within. These examples test, and ultimately disprove the private sector theory of "value added" guarantees through long-term operation and management contracts.

In the following section, four additional barriers to private sector involvement in water and wastewater management are offered as well:

1. Increased federal investment in water and wastewater infrastructure;
2. Automation and improved access to information technology;
3. Regionalization/consolidation; and
4. Designer water/boutique services.

While these issues have been addressed to varying degrees in the previous chapters, they are expanded upon below because each, specifically, stands in the path of increased private sector involvement in both sectors and will play increasingly important roles in influencing future decision making regarding water resources planning.

Challenges for the Private Sector: Reasons for Future Uncertainty

Increased Federal Investment/Federal Trust Fund

As noted in the previous chapter, an increased commitment of federal investment stands to undermine the private sector's ability to gain a greater foothold in utility management or even ownership. The importance of an established federal investment program cannot be stressed enough. Federal investment extends

beyond capital (CAPEX) commitment, it sends a strong signal to consumers and public utility managers about the importance of sustained public investment and interest in critical environmental infrastructure. Furthermore, a federal trust fund creates opportunity for utility managers and city officials to draw on federal resources and public expertise, particularly if funding commitments are connected to a system of increased accountability whereby utilities are required to better account for their assets and project future investment costs with some higher degree of consistency, or undertake a reengineering practice before optioning a private sector arrangement for service provision.

While there is no legal requirement that the federal government support infrastructure investment of any kind, our economic and political history provides ample precedent for this. Indeed, after the Social Security and Medicaid trust funds, our most "famous" federal trust funds cover infrastructure including highways, bridges, mass transit, airports and air traffic control. Clearly, clean water merits as much – if not more – attention than other components of public infrastructure. While the possible constructs of a federal trust fund are numerous, complex and outside the scope of this thesis, it is again important to consider the social and economic externalities generated from the nation's water resources and related infrastructure, and the consequences of for-profit versus not-for-profit approaches to investment in and management of water services.[142]

Automation and Improved Access to Information Technology

[142] The idea of a Federal Water and Wastewater Trust Fund has been proposed by many organizations including AMSA, AMWA ASCE and others for the last decade. Considerably more attention has been given to the idea in the last three years, as updates to the EPA *Needs Assessments* are produced.

Advancements in information technology (IT) and automation are providing small and large utilities alike with better information about their internal services, processes and their "finished products." The cost of much of this technology is being driven down by competition within the IT sector, to the great advantage of the utility. If public utilities can enhance performance through the implementation of new technologies, they stand to achieve many of the same results offered by private sector managers – including reducing costs through staffing reductions due to redundancies created by automation. Secondly, a more open and "free" exchange of ideas and information though training and the web give public utility managers – and particularly those operating smaller systems – greater leverage against their private-sector counterparts. In operation and management contracts, private firms offer considerable savings through access to patented technologies and automated systems. In adopting their services, a public utility is therefore forced to rely on sustained IT oversight from the private firm, perhaps long after a first original 20-year contract expires.

Consider further, therefore, the ancillary effects of increased federal investment in water systems from a technological perspective. Technology and management innovation offer attractive solutions to the high and rising costs of water and wastewater infrastructure. The rationale for federal technology research and development is simple: replacing all water and wastewater assets would cost more than $1 trillion, so improving the performance and longevity of only 1 percent of these assets results in direct savings of $10 billion. Innovation in reengineering practices – as demonstrated in Houston and San Diego, for example – suggest O&M savings can reach 40 percent for a given utility. Congress currently supports

technology research and development through a variety of federal programs at the federal level, including:

- EPA programs administered by its Office of Research and Development and funded through grants to regional research organizations;
- Congressional appropriations to non-profit research foundations including the Water Environment Research Foundation and the American Water Works Research Foundation; and
- The Environmental Technology Verification Program.[143]

Yet, none of these programs focuses specifically on infrastructure. Should Congress authorize funding to support the development and use of innovative technologies that would reduce the costs of meeting national clean and safe water requirements, public utilities could, in turn, free themselves from the associated dependence on private-sector technological innovations that come "packaged" with comprehensive operation and management contracts.

Regionalization and Consolidation

The emergence of the competitiveness concept in water utility management has implications for the small and large utility alike. As technology continues to improve and as population distribution shifts from suburban to metropolitan areas, utilities will have to adjust to meet the changing demands of service provision. For smaller suburban and rural utilities, regionalization – whereby utilities within a specified geographic proximity pool resources and risks and operate under collective public management – offers leverage in improved service delivery and cost control. Since water distribution services cannot be altered due to the capital intensity

[143] See Water Environment Research Foundation (http://www.werf.org); The American Water Works Research Foundation (http://www.awwrf.org) and the US EPA Environmental Technology Verification Program (http://www.epa.gov/etv/)

involved with replacing buried infrastructure, through regionalization, smaller utilities can cut costs without having to relinquish operation and management control.

Regionalization can also help smaller utilities achieve economies of scale and performance improvements and can include a combination of utility organizations, wholesale service arrangements, cooperative agreements, and even satellite management of multiple systems.[144] Regionalization also provides increased opportunities to achieve more universal public-service goals. Large private companies are not likely to benefit or profit from contracting with a "regionalized" utility (or set of utilities) as these firms tend to issue geographic-specific contracts meant to service one particularly well-defined area. Expanding its reach under a regionalized structure may increases a private firm's costs considerably, but may only encompass revenue for a nominal amount of uses. The contracting agent (e.g. the municipality) will not likely want to provide substantially greater fees, however, to include a greater service area.

Competition from Within: The Bottled Water Market

The bottled water market is also applying considerable "bottom-up" pressure on public and private water providers alike. For many U.S. households, the price of one gallon of centrally-supplied water – delivered by tap – is less than one-third of one cent. In general, every other water alternative is no safer, much less convenient, and astronomically more expensive. At $1.15 per gallon, the price of "designer water" is 347 times the price of tap water. Despite the high costs, Americans continue to buy bottled water in increasing amounts. In 1999, bottled water sales increased by 12 percent. In the same year, the nation's water utilities

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[144] Howe, Charles, et al, (eds). *Privatization of Water Services in the United States: An Assessment of Experiences* (Washington, DC: National Academy Press, 2002), 84.

collected revenues totaling about $29.4 billion. Wastewater treatment works collected revenues totaling about $26.3 billion. The bottled water industry collected revenues totaling $5.2 billion. Rough estimates can be used to compare the profit margin for bottled water versus tap water. For larger bottlers, total production costs (including source water costs) amount to about 10 cents for each bottle that can be sold for 70 cents or more (a 600 percent markup). The markup for tap water, even for private providers, in closer to 10 percent. What are the implications of increased consumer dependence on bottled drinking water? Households will, certainly, continue to rely on tap water for cooking and other household uses, but the extent to which their consumption patterns change will further impact public utilities' ability to recover costs. If consumption costs remain well below production costs, utilities will have to restructure rates to reflect consumption changes.[145] In many respects, private sector operators can be seen as competing for the same "space" as designer water suppliers, as both apply pressure on consumers to change their consumption behavior and purchasing habits.

Larger Industry and Sector Trends: The U.S. and Beyond

The aforementioned issues offer evidence that the private sector faces numerous obstacles in gaining a large share of the U.S. water market. Yet, at a macro-level, a compelling argument can also be made that private sector participation has forced a radical and effective shift in the way public sector managers think – and make decisions about – long-term planning for water and wastewater services and needs. Houston's decision to retain operations and management "in-house" is just one example of this. This argument is predicated on

[145] Eisenhardt, Paul; President and CEO, The Eisenhardt Group, telephone interview, February 14, 2005.

the belief that competition "in the market" stimulates and drives change, irrespective of the fact that only three or four service providers offer comprehensive operations and management services and the capabilities to meet the water service needs of large cities.

The previous chapters also examine the privatization trend in water supply and wastewater management through a narrow lens and one that distorts – slightly – the greater picture of water supply, wastewater management, and private sector participation. Privatizations are certainly not unique to the United States, nor are they confined to municipal water and wastewater sectors. Private sector services have often been tapped throughout history, and in many cases successfully, to respond to the changing needs and demands of growing cities in the energy, telecommunications, transportation, public safety and housing sectors, to name a few. Moreover, the focus of this thesis centers exclusively on operations and management contracts in large US cities, only one component of the more robust US water sector and complicated global water sector.

Indeed, most water systems in the United States are small – some 50 percent of community drinking water systems serve 500 people or fewer and 85 percent reach no more than 3,300 people – and the sector as a whole is decentralized and diversified. Roughly 81 percent of the public wastewater facilities in operation today handle no more than one million gallons per day (MGD), enough to serve roughly 8,000 people, and 41 percent process no more than 0.1 million gallons per day.[146] Nevertheless, the relative handful of large systems serve the great majority of people; just seven percent of community drinking water systems serve more than

[146] The Congress of the United States. Congressional Budget Office, "Future Investment in Drinking Water and Wastewater Infrastructure," A CBO Study, Washington DC, 2002, 3.

7,000 people each, but they supply 81 percent of those served by such systems and, very large systems (those serving more than 100,000) represent one percent of systems but 44 percent of all people served. Similarly, the largest three percent of wastewater plants handle 68 percent of the total flow processed by all such plants nationwide. In many respects, small water systems face the same – or more intense – pressures that large city systems face, and the private sector is as actively engaged in marketing its services to these systems as well.

Furthermore, the private sector has emerged in the U.S. water and wastewater sectors in various capacities – beyond that of the long-term operations manager of existing facilities as seen in Atlanta and Indianapolis. Some cities, such as Tampa, Florida and Seattle, Washington have engaged private consulting-engineers to design, build and operate (DBO) large treatment works and desalination facilities.[147] Most of these engagements are relatively new, however, and there are few reliable environmental, social or financial indicators to evaluate the merits or shortcomings of the partnerships yet. A few general conclusions can be drawn from such partnerships, however, including the recognition by these cities that engaging the private sector in a "greenfield" development and subsequent operations and management contract may perhaps eliminate much of the information asymmetry that private providers and cities often experience in long-term O&M contracts, particularly around the current physical state of a system's infrastructure. It might also be concluded that in recognizing the particular water and wastewater needs of these respective communities, each felt unable to leverage the technological advantages that the private sector can – in these instances – offer.

[147] See, for example: Gallagher, Patrick E. Seattle's (US) Innovative Design Build Operate (DBO) Contract. Working Paper Prepared for Camp Dresser & McKee Inc., date unknown.

Regardless of "how" it is offered, privatization of water services nevertheless results in a range of effects felt far beyond the supplier and the consumer. These include employment, considerations of local control and oversight capabilities, and environmental and economic impacts. The appropriate balance of public and private ownership and operations for a municipality is, therefore, a function of values that go beyond the cost, reliability and quality of water. Communities must collectively decide the degree to which private contractor objectives and likely performance are compatible with a range of community values such as environmental preservation, cultural impacts of water, recreational and aesthetic values, and preservation of local employment. The process of water services privatization do tend to increase awareness of water's importance to a community's economy, culture and environmental resources – as demonstrated by the emergence of local action groups, grassroots environmental organizations, and media reports that surface as municipal managers contemplate the future of water services provision. Clearly, community and water service providers will be better served to the extent that these broader considerations of water management are made transparent and are publicly discussed.

Looking forward, we will, nevertheless, see continued restructuring and change in the domestic and global water and wastewater sectors, as a growing population applies pressure to urban environments and as new technologies allow for greater access, at lower cost, to water resources and information about water resources.[148] Thus, the implications of and experiences discussed in the previous chapters should serve as the contextual framework for some of theses changes, and

[148] Rogers, Peter; Gordon McKay Professor of Environmental Engineering and Professor of City and Regional Planning, "Global Water Crisis: Myth or Reality," Presentation Given at MIT on April 14, 2005.

will likely influence, in part, future decisions made by public and private sector managers. In order for any private engagement in water supply and wastewater management to be effective, either locally or globally, both the public and private sectors must also account for the following universal factors.

Politics and The Initial "Terms" of Privatization

Many of the most serious conflicts between private service providers and municipal, or national, governments thus far have their roots in complaints about the "fairness" of the initial terms of privatization.[149] Until operators and public sector managers can meet on a more "level playing field," public-private agreements are likely to remain contentious and many will never transpire. Since the sale price of assets is not of issue in operations and management contracts, both parties need to focus on the core capabilities of the private firm, and the immediate and long-term needs of the municipality. Politics, of course, are central to this discussion; a city and its political leadership must consider its current composition and potential relationship with a private provider twenty-years down the road. Mayors, municipal managers and even senior utility employees must think beyond their tenure as public officials.

Employment-related issues will also continue to fuel contention; labor unions, city managers and private providers must be able to structure contracts that account equitably for benefits transfers, job security and growth. Again, in these circumstances political leaders often think and plan according to election cycles first, but must also consider the legacy created by their decisions. Contractors, on the other hand, must be forthcoming to municipalities with realistic cost and pricing

[149] Gomez-Ibanex, Jose; Lorrain, Dominique; Osius, Meg. "The Future of Private Infrastructure." Working Paper, Taubman Center for State and Local Government, Kennedy School of Government, Harvard University, April 2004.

expectations consistent with any long-term plans for workforce reductions. Developing a level playing field comes as a result of building trust between a municipality and a private contractor at the earliest stages of a negotiation.

Operations and management contracts must be designed to better account for the local needs of a particular system, and the process for doing so must occur in a more transparent environment, in part to account for the limited competition available in the market. The tendency in many cases thus far has been to use a "one-size fits all approach" whereby five-year operations and management contracts are structured to fit twenty-year agreements.[150] Of particular concern is the issue of sustained capital investment and the commitments of CAPEX from the relevant parties – a municipality must be as forthcoming about its long-term investment plans and a contractor must comply, contractually, with small scale maintenance and repair or capital investments in the cases where contracts call for it. Indianapolis' contract with Veolia signals a change in this direction, performance backed contracts hold the contractor to a higher standard than standard cost plus fee contracts.

Finally, a troubling development arising from long-term contracts like Atlanta's, for example, concerns inter-generation equity. The contract included large concession fees, paid by the contractor to the local government, that represent some portion of the present-discounted value of future operating cost savings. Another way to describe them is as the present-discounted value of future user fee increases (or lack of decrease made possible by future operating efficiencies). However defined, the practice means that future rate-payers will pay higher rates than they might otherwise have to as a result of current policy-maker's desire for immediate

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[150] Cairo, Patrick; Executive Vice President of Suez North America/United Water, telephone Interview, December 21, 2004.

cash to spend freely on related or underrated city functions. Even if that money is used in an actuarially wise fashion, such as on infrastructure, there may be considerable dead-weight loss during the transfer.

The experiences in Atlanta and Indianapolis therefore suggest that governments must be "smart buyers" when deciding how to share power with private contractors. Bidding often presumes maintenance of current prices with no assurance that savings or "profits" will be used for system improvements or to lower water bills. Good contracting, moreover, requires crystal-clear performance incentives and meaningful enforcement mechanisms. There is no fool-proof mechanism for achieving this; industry best practices are not well established. Whether public or private, the need for good management is critical and the demands on management are growing. Managing input so that customers and citizens feel their concerns are being addressed, and so that technical staff can get their jobs done, is difficult whether the water company is private or public. Should a municipal government choose to partner with a private provider, it does not relinquish their duty to manage the water sector. Rather, their focus shifts from service manager to contract manager, with the added responsibility of sustained and diligent contract management.

Consumer Protection and Value Setting: Equity for Poor Populations

Ultimately, equity must be the most important underlying consideration in any decisions regarding water supply investment, planning and management. Equity, as discussed in Chapter 1, means the even allocation of resources and services across socioeconomic boundaries. Central to any discuss about water resources planning is, of course, the question of enforcement or, more specifically, what happens when a bill is not paid? Is it fair, or just, to terminate service to delinquent or non-abiding

consumers? While a difficult enough question to answer in industrialized countries, it is at the very heart of discussions regarding private water provision in developing economies.

United Water claims that in Atlanta, the city's policies on collection made it impossible to reach the standards set in the contract. During its tenure, United Water claims that the city was too lenient on non-complying customers, affording staple industries and "favorite sons" such a Coke a Cola, Delta Airlines, the Georgia Institute of Technology tremendous leeway on overdue payments. A United Water representative concluded that this particular circumstance characterizes a larger asymmetry between government and contractors, worldwide. Hoping to avoid the messy politics of enforcing "shut-off" policies for non-complying customers, Suez – will, in the future, act only as the government billing agent and not the enforcer.[151]

This point underscores the difference between water services and the provision of other public or quasi-public goods and services – energy being perhaps the only other exception. Enforcing "shut-off" policies as a measure of ensuring that bills are paid has real consequences for poor consumers worldwide. In some cases, the resulting effect may, in fact, be worse in the United States than in developing countries where informal water vending, opportunities to "steal" from municipal systems and access to other water sources remain available.

Regulation, Reputation and Transparency

Better management and increased investment are also interrelated. Ineffective management drives up the cost of providing services and will make it harder to make a case for obtaining needed investment. Private investors,

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[151] Cairo, Patrick; Executive Vice President of Suez North America/United Water, telephone Interview, December 21, 2004.

politicians, customers and taxpayers are all reluctant to invest when they distrust management to deliver what they are paying for. This perverse value cycle – in which poor service quality undermines investment that in turn undermines service quality – is a significant problem in less developed countries, but also at issue in the United States. Enhanced regulatory systems and cost of service adjustments will do a considerable amount to break this cycle. Consumers must have confidence in their elected officials to make proper decisions about the management of their local utilities. If these decisions involve the private sector, consumers must further be ensured that that proper regulatory mechanisms will be installed (or maintained) to ensure the public interest is met. This holds true in the developed and developing worlds alike, where decisions about water, and its various uses (household consumption, agriculture/irrigation) significantly impact the socioeconomic livelihoods of every consumer.

For the private sector, reputation developed in one service area will affect a company's prospects of obtaining contracts in other service areas. This model is fundamentally sound in theory, but seems to often fail in practice. One important practical failure is when private competitors underbid in order to win a contract, and the contract is so poorly written that they can force increases in their compensation later. Another very common practical failure is to grant long-term contracts that preclude competition for many decades, based on the belief this is needed to induce long-term investments. A noticeable, and not altogether surprising, trend in Indianapolis and Atlanta is the hesitancy expressed by consumers about the "privatization ideology." That is, private sector firms go to great efforts to try to convince the general public of the differences between "public-private partnerships" and full privatizations, as defined by outright asset sale and divestiture. However,

the distinction generally provides little comfort to consumers, who generally weigh together the long-term reality of management and ownership of water-related assets and water resources.

A private water provider and public entity alike must, therefore, ensure that community values are preserved and considered before profit, otherwise the general public will likely greet any new management or management changes with tremendous hesitation or outright resistance. Clearly, significant challenges face the public sector and private firms alike, and future decisions regarding water resource planning and management are likely to be complex, financially intensive and contentious. The degree to which consumer values about health, safety and cost are "held in check" as these decisions are made will determine whether long-term, sustainable solutions are provided to the many problems facing the global water and wastewater sectors.

APPENDIX A: Estimating the Costs of Clean and Safe Water

As noted in Chapter 6, three organizations have been principally responsible for estimating the investment costs for infrastructure upgrades over the twenty year period between 2000-2019: The United States Environmental Protection Agency (EPA), The Congressional Budget Office (CBO) and the Water Infrastructure Network (WIN). Generally, each group agrees on the existence of a "funding gap" in the sector, but estimates for required capital investment for water and wastewater utilities vary between $368 billion and $856 billion.

Table A1. Estimates of Average Annual Costs for Investment in Water Systems as Capital Resource Costs, 2000 – 2019 (In billions of 2001 dollars)	**Drinking Water**	**Waste-water**	**Annual Total**	**Period Total (Water)**	**Period Total (Waste water)**
Environmental Protection Agency					
• Clean Water Needs Survey	N/A	7.3	**7.3**		146
• Drinking Water Infrastructure Needs Survey	11.1	N/A	**11.1**	222	
CBO	12.0 to 20.5	14.9 to 22.3	**26.9 to 42.7**	240 to 410	298 to 446
Water Infrastructure Network	20.9	19.2	**40.1**	418	384

Sources: US Environmental Protection Agency, The US Congressional Budget Office (CBO), The Water Infrastructure Network (WIN)

This appendix provides some additional clarification on how each group derives their respective estimates.

1. U.S. EPA Estimates[152]

EPA estimates a total 20-year capital investment need for clean water (wastewater) infrastructure of $146 billion and $222 billion for drinking water. EPA's estimates are noticeably more conservative than either the Congressional Budget Office or the Water Infrastructure Network, in large part because EPA chose not to account for investment

[152] As extracted from: USEPA, "The Clean Water and Drinking Water Infrastructure Gap Analysis." EPA 816-R-02-020, 2002. Washington, DC: US Environmental Protection Agency.

required to cover Combined and Sanitary Sewer Overflows, both of which are accounted for in the CBO and WIN estimates. EPA also acknowledges that these estimates are conservative; they are based on stringent documentation criteria for reporting from public water and wastewater systems, and also on the use of a questionnaire to identify the needs of medium and large systems. EPA only estimates costs in the cases where inadequate information is reported from those systems selected to participate in the survey. As a bottom-up study, EPA measures investment in current resource costs – that is, total capital costs regardless of financing but without including interest costs. EPA's survey covers 4,000 public water and wastewater systems, of varying sizes. Estimates exclude community water systems on Native American Reservations and in Alaska and Hawaii, each of which are accounted for in specific analysis. EPA's method for estimating the difference between needs and current spending involves the following five primary steps"

1. Estimating the total capital investment needs for the next 20 years using data from the Clean Water and Safe Drinking Water Needs Surveys, adjust for underreported replacement needs.

2. Calculate the impact of financing the capital investment needs to determine total capital costs and total capital payments from 2000 to 2019.

3. Estimate total O&M needs for the next 20 years using data from the Bureau of the Census Government Finances Data Series for local government expenditures on for sewerage and drinking water infrastructure.

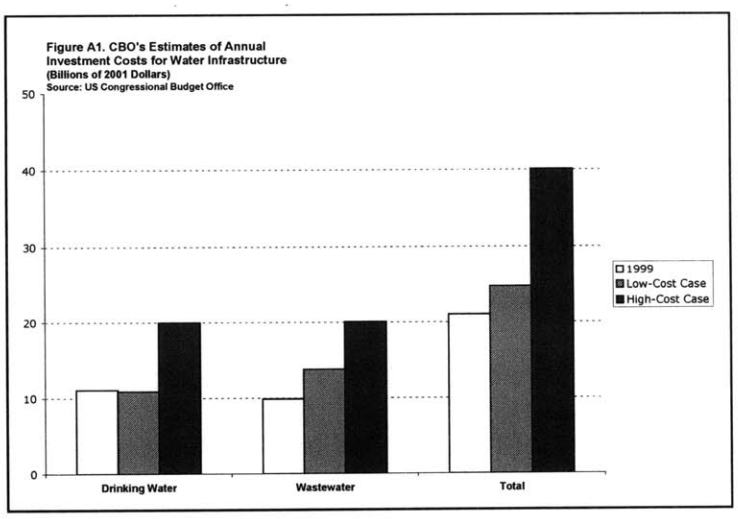
4. Consider historical spending, develop base levels of current annual capital spending and current annual O&M spending. Historical data on local government expenditures are drawn from the Bureau of the Census Government Finances Data Series.

5. Compare the projected annual needs to current annual spending estimates, considering both capital needs and O&M needs, and project the annual payment gap in clean/safe water spending.

2. Congressional Budget Office Estimates[153]

CBO estimates that for the years 2000 to 2019, annual costs for investment will average between $11.6 billion and $20.1 billion per year for drinking water systems and between $13.0 billion and $20.9 per year billion for wastewater systems. These costs are isolated from O&M costs, which CBO estimates to be between $25.7 billion and $31.8 billion for water and wastewater infrastructure, respectively. CBO chose to isolate O&M costs because they are not eligible for aid under current federal programs.

CBO derived its estimates of investments by projecting costs for both physical capital and interest on loans and bonds. CBO offers both a "low-cost" and "high-costs" case, which are meant to capture the most likely possibilities to occur over the next twenty years. Both cases were developed as a result of the considerable uncertainties and limited amount of information available at the national level regarding existing water and wastewater infrastructure. CBO's estimates measure investment spending in costs as financed, rather than in current resource costs – the yardstick that economists typically use. Costs as financed comprise the full capital costs of investment made out of funds on hand – that is, on a pay-as-you-go basis – during the period being analyzed and the debt service (principal and interest) paid in those years on new and prior investments that were financed through borrowing.



[153] As extracted from: The Congress of the United States, Congressional Budget Office, "Future Investment in Drinking Water and Wastewater Infrastructure," A CBO Study, Washington DC, 2002.

Within this framework, CBO's two cases differ in the value for six assumptions about physical capital requirements and for three assumptions about financing costs, as detailed in Table A2.

Table A2. Assumptions Used in CBO's Low-Cost and High-Cost Cases		
	Low-Cost Case	**High-Cost Case**
Capital Factors		
Savings from Increased Efficiency by Drinking Water and Wastewater Systems (Percent)	15.0	5.0
Drinking Water Systems		
• Annual percentage of pipes replaced	0.6	1.0
• Average annual cost for regulations not yet proposed	0	0.53
Wastewater Systems		
• Annual percentage depreciation	2.7	3.3
• Share of investments in EPA's needs survey for replacing existing capital (percent)	25.0	15.0
• Average annual cost for abating combined sewer overflows (Billions of 2001 dollars)	2.6	5.4
Financing Factors		
Real (inflation-adjusted) Interest Rate (Percent)	3.0	4.0
Repayment Period	30 years	25 years
Pay-As-You-Go Share of Total Investment (Percent)	15.0	30.0

Source: The US Congressional Budget Office (CBO)

The assumptions most responsible for the difference in the two scenarios' estimated costs are those about the rate at which drinking water pipes are replaced, the savings associated with improved efficiency, the costs of controlling combined sewer overflows, and the repayment period.

3. Water Infrastructure Network Estimates[154]

The Water Infrastructure Network calculates total 20-year isolated capital needs to invest in new water infrastructure and replace old infrastructure at roughly $1 trillion, or about $47 billion per year. Of this total, WIN estimates rehabilitation and replacement of drinking water facilities to cost $24 billion per year and $23 billion per year for wastewater. These estimates assume that 25 percent of water and wastewater facilities are financed

[154] As extracted from: The Water Infrastructure Network (WIN). "Clean and Safe Water for the 21st Century: A Renewed Commitment to Water and Wastewater Infrastructure," Washington: Water Infrastructure Network, 2002.

with cash in the year of the investment. The remaining 75 percent of each year's capital outlay is financed with 20-year bonds or loans bearing a 3 percent real interest rate. WIN's calculated capital base includes operations and maintenance outlays, structured on a 25 percent "pay-as-you-go" basis and 75 debt financing.

Unlike the Congressional Budget Office, The Water Infrastructure Network's estimates of total investment needs (capital plus financing) do not reflect costs as financed: they include total debt service on new investments from 2000 to 2019, regardless of when those payments occur, rather than debt service (on both pre-2000 and new investments) actually paid during the period. The difference is important because the investments financed from 1980 to1999 and still being paid off from 2000 are to 2019 are smaller than the investments projected to be financed during the latter period.

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