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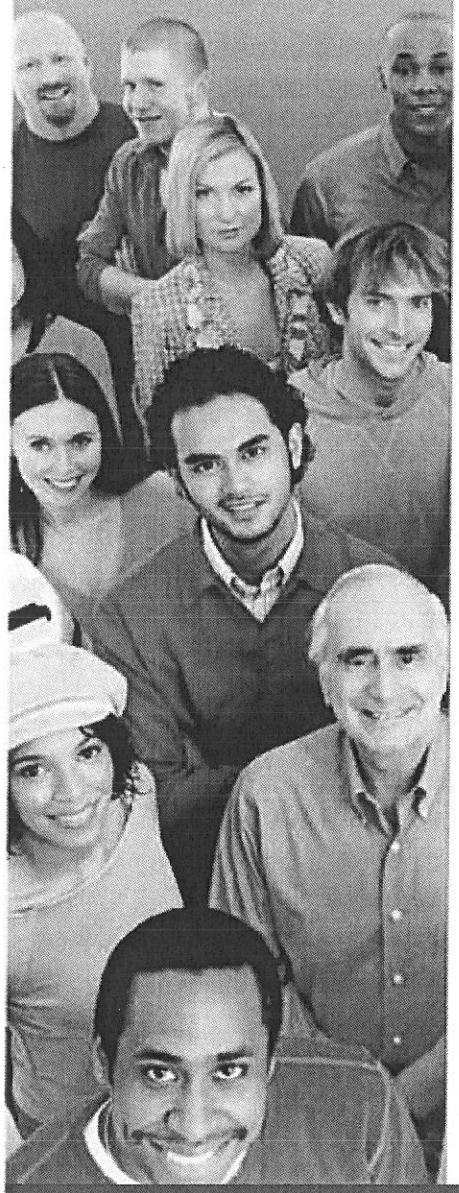

CASE STUDY

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PRIVATIZATION OF THE SAINT LOUIS CITY WATER UTILITY

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INTRODUCTION

If economics fundamentally entails the study of scarcity, it might seem odd to discuss the Saint Louis water supply in economic terms. Observers would likely not expect that a metropolitan area located at the confluence of the two largest rivers in North America would have water scarcity issues — and, indeed, it does not. An overabundance of water, in terms of flooding, is a much more pressing concern for Saint Louis. This abundance of water, however, allows for a direct comparison of water provisioning methods, without the necessity of considering issues of supply equity or rationing that can be found in much of the world, including the western United States.

The city of Saint Louis, with a population of approximately 350,000 people, provides water to its residents and firms via the common municipal water utility. The surrounding and politically separate Saint Louis County, with a population of slightly less than 1 million, has long used private utilities to provide water to almost all of its residents and businesses. While that is the primary difference between water systems in the city and county, there are similarities as well. They both get much of their water from the Missouri River, and they share the same sewer system (and its governing body), which directs the disposal of stormwater and wastewater.

One method of water delivery — via public or private utilities — is not inherently superior to the other. Indeed, all indications point to the water division of the city of Saint Louis as doing an excellent job.[1] In 2007, the United States Conference of Mayors designated the city of Saint Louis as having the finest-tasting tap water in the country. Furthermore, the city's fire department is the only fire department in the state of Missouri with a class 1 insurance rating.[2] The quality of the city's water hydrant system plays an important role

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in that rating. Finally, a 2001 report by the Mackinac Center for Public Policy, which advocated various privatization possibilities for Michigan, compared Detroit's ratio of water system employees to two other large cities.[3] According to that report, Detroit had 3.47 employees per million gallons of water produced per day (MGD), Philadelphia had 3.41, and Chicago had exactly 2.0. Saint Louis has 2.76 employees per MGD, which compares well to these three cities, especially considering that all three other cities have much larger water systems and — in theory, at least — might benefit from economies of scale more than Saint Louis does.[4]

As a lifelong Saint Louisan who has traveled somewhat extensively around the United States, I can attest to the superior quality of the tap water in both Saint Louis city and county. The water used in the county is essentially the same quality as in the city; the city's intake and treatment plants sometimes even supply a small portion of it. The potable water in both the city and county are of high quality, and because of the large and readily obtainable supply, its price should favorably compare to that of other cities.

In today's terms, the Saint Louis water division can be described as a municipal utility that provides high-quality water at an affordable price to the people of Saint Louis. From another perspective, however, it is also a valuable asset that could be auctioned to a private water utility, generating an enormous amount of money for the city and its taxpayers. Simply put, the city's water division is worth hundreds of millions of dollars. Unless the city can demonstrate that private operation of the water supply would result in both lower overall water quality and higher real costs (after adjusting for the current subsidies that are common with municipal utilities), the city should strongly consider the financial opportunities of selling its water treatment and distribution systems.

WATER AND WASTEWATER TREATMENT IN SAINT LOUIS

Three primary entities work with water and wastewater treatment and distribution in Saint Louis. The Metropolitan Sewer District (MSD), a unified special taxing district, manages wastewater and stormwater collection and treatment in the city of Saint Louis and almost all of Saint Louis County.[5] Potable water, also referred to as tap water or drinking water, is managed separately in the city of Saint Louis by a municipal water division that collects, treats, and distributes water to citizens and businesses within the city. On the other hand, Saint Louis County has long used a private utility — currently Missouri-American Water, a division of American Water Works — to provide potable water to almost all of its residents and businesses.[6] Along with Indianapolis and San Jose, Calif. Saint Louis County has historically been one of the largest urban areas in the United States to receive potable water from a private, investor-owned utility. Government-owned systems, such as the one found in the city of Saint Louis, are more common — particularly for large cities.

Collection and treatment plants are located along all three major rivers that form the boundaries of Saint Louis city and county: the Mississippi, Missouri, and Meramec rivers. These free-flowing rivers

require less pumping than needed by water facilities in many other areas, which leads directly to lower water acquisition costs.[7] Both the city water division and Missouri-American Water operate large treatment plants along the Missouri River in Chesterfield (west Saint Louis County), and Missouri-American has a second, smaller, facility on the Missouri in north Saint Louis County. The two Chesterfield plants are close to each other, and both jurisdictions have developed system-sharing capacities in case problems arise. The city water division also has a large treatment plant along the Mississippi. Operating at maximum capacity, the city's two water treatment plants can treat and distribute 380 million gallons per day.[8] Missouri-American Water operates two facilities along the Meramec, which is a much smaller river than the other two, and the MSD also has three wastewater treatment plants there.

The Saint Louis area has generally favored private, regulated utilities over government-owned utilities. AmerenUE, an investor-owned company, provides electricity to both Saint Louis city and county.[9] Laclede Gas, another private company, provides natural gas to both areas. Among the three utility services commonly referred to as "natural monopolies," the only one provided by a government-owned and -operated entity is water, and then only within the city of Saint Louis. (See Appendix I for a definition and illustration of a natural monopoly.)

ECONOMIC LITERATURE REVIEW

There is limited economic literature on the issue of public *versus* private provision of water. This can likely be attributed to the fact that public provision of water dominates the industry. According to *Privatization of Water Services in the United States* by the National Research Council (NRC), there are approximately 54,000 community water systems in the United States, public and private.[10] The majority of these are small, with 60 percent serving fewer than 500 people. Although private companies make up 33 percent of total water operators, the vast majority of private systems are small. Only 12 percent of private systems serve more than 10,000 people. Private provision of water has consistently served around 14 percent of the U.S. population since World War II, with only a few large urban areas, including Saint Louis County, receiving water through private sources.

Why has public provision of water been the rule in the United States? A 1938 study written by economist Roland Eutsler, of the University of Florida, observed that people have an attitude that water is free and should be provided at a minimum of cost.[11] The 2002 NRC study indicates that this is still true. Comparing water to electricity or gas may help illustrate why this attitude is so prevalent. Electricity must be generated by someone or something, and is dangerous to distribute. Gas must be mined from the ground and then refined into the proper form for various uses, and is also potentially volatile to distribute. On the other hand, people perceive water as being there for the taking. This is obviously a simplification, and applies to some regions much more than others, but it is not difficult to see why people have historically viewed water as an open public resource that should be readily available at a low

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nominal cost, if any. These views would likely be strongest in areas, such as Saint Louis, that feature enormous supplies of available fresh water.

The Eutsler study is a fascinating glimpse of water utilities at a time when fire services were evolving, water meters were a new invention, and epidemics that spread through water, like cholera, were a fresh memory. Eutsler discussed the disputes over whether fire protection should be paid for through taxation or water service charges. He said, "It is coming to be an established principle in public utilities, however, that the charge for a service should be commensurate with its cost." He nonetheless argued in favor of paying for fire protection services by charging property owners, through taxes, rather than water users, through increased rates. Regarding potable water charges, Eutsler suggested a minimum monthly fee to cover the fixed costs of the service, combined with metered rates based on water usage. This idea may seem obvious to us now, but it was not common in 1938 — largely because the water meter had only recently been introduced. He argued that rates based solely on static property features like the size of a house or yard would lead to a set of perverse incentives, providing "no inducement for the consumer to conserve in the use of water or to repair minor leaks."

Eutsler also touched on the question of the public provision of water, writing, "Public ownership and operation of public water supply systems is the rule rather than the exception. Since the industry developed under public ownership, it is accepted as normal, and none of the usual arguments on the pros and cons of public ownership are applied to this field." Eutsler concluded that, with some exceptions, "municipal water supply utilities have done an efficient job."

A 1986 study by William Hausmann, David Kemme, and John Neufeld went back even further than Eutsler, to the late 19th century.The authors reviewed an 1899 survey of waterworks companies, both public and private, by the Department of Labor, which had created the survey in an attempt to provide governments with a guide in choosing between public and private water companies. Applying modern statistical analysis to the 1899 survey revealed that municipal and private water companies had only slight cost differences, with private water companies reporting slightly lower, but statistically insignificant, operating costs per million gallons of water. Private companies had demonstrably greater revenues, however, which were statistically significant when measured per million gallons. These higher revenues in the face of relatively equal costs indicate that private companies were charging more for water provision, but this is not a case of robber barons exploiting the public. Evidence shows that, on the contrary, public water companies had underpriced and subsidized their water services, with 19 of the 32 public companies included in the survey operating at a loss. The private companies enjoyed a rate of return amounting to only 3 percent, "hardly evidence of monopoly profit," in the words of the 1986 study.[12]

In a 2000 article for *Water Resources Update*, economist B. Delworth Gardner of Brigham Young University concluded that private water companies are more efficient than public water companies.[13] He compared water rates among public and private water suppliers in Utah in the early 1990s and determined that private

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operators charged less for the same product, even before accounting for the different tax burdens they face, which plainly favor public companies. Because the companies Gardner reviewed all operated in the same geographic area, the lower rates charged by private companies can reasonably be attributed to greater efficiency in the private sector. When you consider that the private firms were both charging less for water and paying more in taxes, the efficiency differences in this instance become startling. In Saint Louis County, the private water supplier charges more for water than the public city operator, but the difference between these rates is small, and can partly be accounted for by the fact that Missouri-American is taxed as a for-profit company.

Researchers within the University of Nevada system have undertaken some interesting work on the issue of water privatization and efficiency. A 1993 study found that, on average, private water utilities across the country operated more efficiently than public utilities.[14] Two years later, Arunava Bhattacharyya and others studied the technical efficiency of rural water utilities in Nevada, determining that private water utilities were more efficient than public utilities after collecting data from 26 Nevada suppliers.[15] However, the study made a distinction among the various types of public utilities it reviewed, concluding that those owned by municipalities, as is the case with the Saint Louis water supply, operated more efficiently than those under other forms of government ownership.

In between these two studies, Bhattacharyya also cowrote a paper that arrived at a different conclusion.[16] He and the other researchers analyzed data from a 1992 survey of both public and private utilities conducted by the American Water Works Association. They concluded that public firms actually operated more efficiently, but that "wider dispersion of technical efficiency, from best to worst practice" also existed among public firms. The authors said that the private firms they examined operated less efficiently, "perhaps because private utilities are relatively more burdened with the cost of regulation."

Another study, written by Susan Feigenbaum[17] and Ronald Teeples of Claremont McKenna College, found no difference in costs between public and private water utilities. The authors measured utility costs in a variety of ways, determining that in neither of the cost formulations they reviewed, "do we find significant differences in the cost functions of government versus private operations."[18]

Although the cost structure of water utilities has undoubtedly changed during the 110 years that have passed since the first data considered in the present study, government suppliers continue to demonstrate an inability to properly charge for the full cost of a utility. Political pressures keep rates lower than market value, which in the short run can offer the perception of inexpensive water that is actually paid for through higher taxes and subsidies, and in the long run can result in a lack of crucial investment in infrastructure and utility maintenance. The two primary reasons that government ownership can be competitive with private ownership at all directly relate to the taxation and regulation advantages that government jurisdictions grant to themselves.

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RECENT CHANGES TO PRIVATE WATER UTILITIES

Eutsler's conclusions and the public ownership model have remained dominant for some time, but recent years have seen an increase in the potential for varying degrees of water utility privatization. A 2003 report by the Reason Foundation stated that more than 1,100 municipalities had privatized their municipal water utilities since the 1990s.[19] The term "privatization" can mean many things in Reason's work, though. It includes: the outright sale of public utilities; subcontracting of operations, an arrangement in which the public maintains ownership of the asset; and asset leases, in which private entities receive long-term rights to provide the service, but the public still maintains ultimate ownership. Subcontracting of operations — also called outsourcing — has been the most common recent form of water utility privatization in the United States, according to Reason. This type of privatization is a far less controversial and less substantial step than the type of pure sale of facilities that the present analysis will consider for Saint Louis.

The number of water utility privatizations has increased for various reasons. Aging water systems, increased water quality regulations, and suburban growth have all strained municipal budgets, and have forced many cities to consider various forms of privatization.

PUBLIC VS. PRIVATE, PROS AND CONS

In an October 2000 article for *Water Resources Update*, Janice Beecher, Ph.D., provided a useful summary of the advantages and disadvantages entailed by varying structures of water supply.[20] The principal advantages of municipal ownership generally involve a privileged tax status, a perception that the taxpayers control a valuable asset, and staving off a widespread fear of even regulated private monopolies in an industry that isn't naturally suited for level competition. The primary disadvantage of public ownership is the lack of efficiency gains that the profit motive can bring to an undertaking, generally not found to the same degree in public utilities no matter how well they are managed.

The key advantages for full privatization include the tremendous investment and financial potential of the private sector, opportunities for multiple jurisdictions within a given region to cooperate and pool resources (this is particularly appropriate in Saint Louis' situation), and increased accountability — perhaps surprisingly, private utilities receive more regulatory oversight, rather than less, when compared to government-owned utilities. Full privatization, however, would entail still more difficulties, such as enforcing contractual standards once a private entity has taken over the operation. Beecher describes this as "relatively weak competitive pressure over time."[21] A contract may allow for the city to regain control over the utility if standards are not met, but realistically this is a difficult and time-consuming process that is unlikely to occur.[22] Even those who support private provision of utilities can see how the people of Saint Louis County would be in a difficult situation if the quality of Missouri-American's water provision were to decline suddenly and

drastically. The county has no affordable alternative way to provide the water outside of building new long-term water supply infrastructure.[23]

For Beecher, the middle ground of contracted work provides its own unique advantages, such as realizing efficiency gains from the private sector without giving up public control, and benefiting from the lower capital costs that come with public ownership. Beecher writes, "Indeed, some water and wastewater systems have experienced demonstrable savings and achievements since initiating contract arrangements."[24] Such contract arrangements, however, still have the potential for problems stemming from government involvement, such as rigged bids, favoritism, and corruption. Contract length can have a significant effect on these issues. Short-term contracts involve more instant pressure for the contractor to earn an immediate profit, and to maintain greater government involvement in the system. Longer-term contracts allow the contractor time to invest in the operation and reduce risk, but they also "challenge the capacity of local governments to design and oversee contracts to protect their interests over the long haul."[25]

There can be no certainty that all of these advantages and disadvantages will apply in Saint Louis. The city water division could hypothetically be operating just as efficiently as a private company. Beecher warns that "Cities should avoid cashing in for a one-time monetary windfall, without vision or purpose about the long-term interest of the community."[26] But what if cashing in on the windfall is one part of a long-term vision for the community? The evidence shows that — in most cases, but not all — private providers operate utilities more efficiently than public providers, even if they do charge more for the water, and even if the efficiency gains are minor. If a private entity were willing to provide water to the people of Saint Louis, accept the attendant regulatory limits, including rate caps, and pay the city of Saint Louis hundreds of millions of dollars for the ability to provide water in the same manner that people in the surrounding county have received it for decades, why would the city not strongly consider this possibility?

RECENT PRIVATIZATION EXAMPLES

In early 2002, the city of Florissant, a Saint Louis County suburb with a population of 55,000, sold its water distribution system to Missouri-American Water for $14.5 million. Two years later, another suburb, Kirkwood, population 27,000, considered selling its distribution system but chose not to do so. Kirkwood's system had an estimated sale price of between $6 million and $8 million. Comparing Florissant's actual sale price to the average of Kirkwood's estimated range, the two are close, at approximately $260 per resident.

The city of Webster Groves received a significantly larger amount per person when it sold its water system to Missouri-American in 2002: $9.5 million, or about $410 per person, for its population of slightly more than 23,000.[27]

Even larger amounts per capita have been seen in recent Pennsylvania acquisitions by Pennsylvania-American Water, another division of the same company. In July 2008, they paid $2

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million to purchase the water and wastewater assets of the Claysville-Donegal Joint Municipal Authority. That $2 million payment netted the firm only 550 customers. The month before, it paid $240,000 for the water and wastewater assets to service only 180 customers in Monroe County. (To be clear, these numbers are for customer figures only, not for total residents. A family of two and a water amusement park would each be one customer.) The Saint Louis city wastewater system cannot currently be considered for privatization, because it is operated by a joint city-county public entity, but the purchase prices for similar systems are still astounding.

In late 2008, Trenton, N.J., announced a plan to sell its suburban water pipelines and distribution system to New Jersey–American Water. Trenton will continue to treat and provide water within the city of Trenton itself, but now plans to sell its water wholesale to New Jersey-American Water, which will maintain the suburban delivery system and bill suburban customers. The distribution system being sold serves approximately 40,000 customers, primarily residential, and has an $80 million price tag. Although the suburbs are fighting this plan, and some residents opposed to the sale have filed suit, the sale price alone demonstrates the incredible value of these water systems.

One water system that is not as useful for comparative purposes as might be hoped is Saint Louis County Water, a division of National Enterprises Inc. (NEI), sold in 1998 to American Water Works Company, predecessor to the conglomerate that now owns Missouri-American Water. In that case, American Water paid NEI $700 million for water utilities serving 1.5 million people in multiple regions. There are too many questions about this sale for it to serve as a useful comparison. Saint Louis County Water was the largest entity sold in the deal, although water utilities in Indiana, Illinois, and New York were also included in the purchase price. Furthermore, it is unknown whether the utility sales in the other three states included wastewater, or whether they only included potable water systems like in Saint Louis County. This sale also predates several smaller municipal privatizations within Saint Louis County, discussed previously in the present study, so it is unclear how many Saint Louis County residents received water from the private provider at that time — likely closer to 750,000 people than the roughly 900,000 residents currently served by Missouri-American. However, that sale again serves as an example of the large amounts of money that companies are willing to pay for utilities that could be available to the people of Saint Louis.

MAJOR COMMERCIAL AND INDUSTRIAL WATER USAGE IN THE CITY OF SAINT LOUIS

The primary difference between comparable examples of utility sales and any potential water privatization in the city of Saint Louis is the commercial and industrial base of the city. All cities have small businesses, office parks, and shops that people work in and frequent. Those types of businesses can essentially be captured in population totals. One needs to take into account the possibly higher marginal water usage totals in Saint Louis,

and the slightly higher per-capita value of the system, and ask if there are certain businesses or assets in the city that would make the water system significantly more valuable than can be seen through population comparisons. I believe that answer is yes.

If a private water company could imagine one potential "dream customer," I don't think you could come up with a better one than the world's largest brewery. The famous Anheuser-Busch InBev brewery on Pestalozzi Street, just south of downtown Saint Louis, uses a staggering amount of water each year. The brewery could produce 15.8 million barrels of beer per year operating at 100-percent capacity, although they produce a little less than that in actuality. According to the Anheuser-Busch website, the company spends $30 million per year on combined utilities at its Saint Louis brewery.[28] The company does not break down those figures further, but using the standard city commercial rate for large-scale water users — 84 cents per hundred cubic feet of metered water — the brewery has an estimated annual water bill of $3.9 million dollars. (Please see Appendix II for a detailed explanation of the conversions and estimates used in arriving at this figure for Anheuser-Busch InBev.) This constitutes the potential available revenue from just one of the approximately 95,000 water customers in the city of Saint Louis. The value of the right to sell water to a customer of this size might significantly increase the value of the city water division for a private bidder.

Compared to Anheuser-Busch InBev, with an estimated water bill that single-handedly represents almost 10 percent of the water division's budget, other customers will pale in comparison, Still, some of them deserve consideration for valuation purposes.

Sports teams and stadiums are another category of customers with value to a water company that would not be properly accounted for in population totals. All of the Saint Louis area's major stadiums, and most of the concert halls, fall within city limits.

The St. Louis Cardinals play 81 home games per year at Busch Stadium. According to information released by the team, it uses approximately 25 million gallons of water annually, for which it pays the city water division $72,000. Aside from the Cardinals, the St. Louis Blues play 41 home hockey games per year at the Scottrade Center. Maintaining the ice surface alone requires 50,000 gallons each year. The St. Louis Rams draw 66,000-plus people to 10 home games per year at the Edward Jones Dome (including pre-season games). The Saint Louis University (SLU) men's basketball Billikens play 18 games per year [29] at the Chaifetz Arena on SLU's campus. Combined, all of these teams bring millions of people into the city to enjoy sporting events, eat food cooked and prepared with water, drink beer, drink fountain sodas that use vast quantities of water, and, judging from personal experience and insight, frequently use the restroom.[30]

These stadiums also host concerts and other events, as do concert halls like the Fabulous Fox Theatre, Powell Symphony Hall, the Pageant, and the Muny Opera. Concerts, plays, and musicals bring hundreds of thousands of people from around greater Saint Louis into the city each year. Granted, not all of the water used in sports and concert

Maintaining the Blues' ice surface alone requires 50,000 gallons each year.

It would be imperative for the city to work with a qualified utility valuations expert to refine the numbers.

facilities is new and potable. Unlike homes, large facilities such as these can recycle their potable water for additional sanitary uses. However, most of the water used in these facilities is new, potable water purchased from a water utility.

One final water customer that must be considered when estimating the value of the Saint Louis water division is the enormous Barnes-Jewish Hospital and Washington University Medical School complex. Hospitals use a tremendous amount of water. A report from Massachusetts estimated that hospitals use between 40 and 350 gallons per bed per day for purposes including medical processes, laundry, cafeterias, heating and air conditioning, and sanitation.[31] Water use indices issued by the United States Department of Energy (DOE) state that hospitals range from 80 to 150 gallons of water per bed per day, 120 gallons on average.[32] Combined, the hospitals in the Barnes-Jewish complex have 1,503 beds. If they use the DOE's average figure of hospital water usage, that would amount to 66 million gallons of water annually. These institutions' stringent health standards would require almost all of that to be new potable water.[33] Furthermore, the DOE average includes hospitals that primarily provide outpatient services, and so lack trauma centers or large numbers of surgeries. Barnes-Jewish undoubtedly uses more water than the industry average, and our estimate of 66 million gallons does not include the half-dozen other hospitals in the city of Saint Louis. Facilities such as these would be incredibly valuable to any potential private water investors and bidders.[34]

There is also an open question as to whether the city would pay for its own water use if it were to privatize the water division. A recent audit by the state questioned why the city did not account for the city's own water usage — a substantial figure, considering water usage in parks. The audit estimated that the city used $6.7 million a year in water for Forest Park alone. If the city were to pay for its water use after privatization, that eventuality would certainly increase the utility's sale price, while also increasing the city's future costs. However, the city could stipulate as part of the sale that any potential buyer must continue providing water to the city without charge. This would have to be part of the complicated sale negotiations of the type found in any such deal.

The type of large-scale water consumers discussed in this section serve to increase the value of a water utility, but it is important to note that the rates of regulated utilities are set in a different manner than in other industries. Many other issues need to be considered that might seriously limit the potential profitability of the Saint Louis water system.

THE DIFFICULTY OF VALUING THE CITY WATER DIVISION

Before attempting to estimate the value of the city's water division to a private investor, it should be noted that the calculations used in the present study involve many variables that are often difficult to evaluate. If city officials were to move forward in considering such privatization, **it would be imperative for them to work with a qualified utility valuations expert to refine the numbers.** Valuing any privatization proposal is difficult, but valuing a utility privatization is

particularly difficult — and valuing a utility that has operated as long as the Saint Louis city water division has is more difficult still. This particular difficulty can be attributed to two words, with which I had little familiarity before beginning this project: rate base.

A regulated utility is allowed by the regulatory body to recover its investment by setting a proportionate rate base. The formula to determine a rate base is complicated, but, in simplified terms, it derives from the depreciated value of the utility's invested capital. For example, if a new utility spent $1 million dollars in its startup phase, and the Public Service Commission (PSC) determined it would allow a 3-percent return, the utility would be allowed during its first year to charge customers enough to cover expenses for one year of operation plus $30,000. The rate base changes over time, as utilities infuse their operations with new capital, their old investments depreciate, and they replace some of those old investments.

Accurately forecasting the future rate base is both important and difficult for potential investors. If a hypothetical company were to buy a widget factory for more than it is generally considered to be worth, it could potentially try any number of strategies to recoup its investment and earn a profit, like increase the selling price of its widgets or refine its marketing strategy. If a company overpays for a utility, however, the PSC may not make corresponding allowances. Spending $2 million to acquire a utility with a rate base of $1 million would likely still result in a regulated return based on only $1 million of that investment. Overpaying for a utility can entail serious financial risk.[35]

Accounting for this risk is possible if the potential purchaser of a utility knows what the rate base will be. Sometimes, however, even that piece of information is unknown. The Saint Louis water division has never been regulated by the PSC, and has never been required to track its valuation for the purpose of setting rates. Many of the Saint Louis water facilities in use are more than a century old; the Chain of Rocks treatment plant began operations in 1894.[36] Although the city tracks the value of its water division facilities for use in financial statements, that valuation is almost certainly insufficient for establishing an accurate rate base.

If Saint Louis city were to privatize its water division, the PSC would face a monumental task in determining the rate base, but it would be worth the effort. The process would involve attempting to determine the total investment — both public and private, large and small — that has been made in the city water system during the past century and a half. Calculations would have to consider present values and depreciation, measure the extent of immediate repairs and upgrades for which a new private operator might deserve to receive credits, and dozens of other important issues. There is no way to know what the final rate base would be, and this makes any sale price estimates nothing more than well-researched guesses. This lack of knowledge might also discourage potential bidding, although there are auction mechanisms that attempt to address such difficulties (For a discussion of various auction options, please see Appendix III.).

WHAT IS IT WORTH?

The city of Saint Louis does not assess the value of its water holdings in the same manner as it does with other

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real and personal property, because there is little point in assessing tax-exempt property. However, the city does value the property for its annual financial report statements. The comptroller's office has valued the capital assets of the Saint Louis water division at $155.9 million. That breaks down to $19.1 million for buildings and structures, $89.9 million for reservoirs and water mains, $36.9 million for division equipment, $1.2 million for land, and $8.8 million for current construction projects.[37] The division saw revenues of $44.1 million in 2007, and outstanding bonded debt of $29.2 million. The city arrived at this $155.9 valuation in a manner that differs from the one that would be used to determine current market value. My own choice is to estimate conservatively and predict a value of approximately $300 million dollars if the city were to privatize the water division. (For a detailed explanation of this estimate, please see Appendix IV.)

WATER PRICING

According to the National Research Council, "Economists generally agree that water and wastewater services are frequently underpriced."[38] One frequent critic of privatization has said, "All around the country, wherever American Water is, the rates are going up."[39] The NRC study discussed how political bodies face electoral pressure to keep rates low in water utilities operated by municipalities. If water rates are artificially low, however, and general taxes must be used to make up the difference — or, worse, necessary upkeep is delayed because of a lack of funds — how does this benefit a community? The Saint Louis City Charter only stipulates that the water division must charge rates sufficient to pay for the division's operational expenses and the interest on any water bonds. It is not required to charge rates high enough to cover long-term infrastructure investment, if it chooses not to do so.[40] Allowing a commodity to sell at its natural market price, whatever that may be, increases efficiency and reduces dead-weight loss. Price ceilings established through political considerations trade short-term political gain for long-term financial difficulties, and increase the risk of overbuilding because end users will overconsume when they don't pay the true cost of their water.[41]

There is little dispute that public water will sell at a lower price than private water, for a variety of reasons, foremost of which is the tax-exempt status that public utilities enjoy. Both the land and equipment used by public utilities are tax exempt, and the utilities can issue tax-free bonds. Private utility bonds, on the other hand, are taxable, so they must compete with higher interest rates. Private utilities also pay property taxes on their facilities, which can be substantial. Obviously, the cost of doing business is lower for public utilities. Although the cost of water may be lower as a result, marginal tax rates for others might be higher than if the utility were operated by a private firm, because the tax-exempt status of public utilities means that those potential revenues are collected from elsewhere in the economy.

The profit motive may also be a reason for higher prices charged by private utilities, but this is that same motive that lowers costs and drives efficiency. A 1999 study by the National Association of Water Companies found that an assessment of 29 water utility

privatizations demonstrated a cost savings of between 10 and 40 percent after privatization.[42] The cost savings from privatization are substantial.

Comparing direct costs between the public water utility in Saint Louis city and the private supplier in Saint Louis County is more difficult than it might seem. Saint Louis city charges customers in a couple of different ways on quarterly water bills: either a flat rate based on home and street frontage size, or a flat rate based on meter size (larger customers, such as businesses, require larger meters) in conjunction with a charge for the amount of water consumed. Missouri-American bills its county customers based on the size of the meter, water consumption, and a standard monthly service charge. (For a detailed discussion of the use of flat-rate billing within the city of Saint Louis, please see Appendix V.)

WATER PRICE COMPARISON

Saint Louis County residents pay more per year for water than Saint Louis city residents. According to the city water division, after the July 1, 2009, rate increase, the typical residential customer pays $65.17 per quarter in water charges, plus utility taxes.[43] The state audit report completed in March 2010 noted that the city water division's practice of instituting rare, but large, increases in water rates is probably harder on consumers than more frequent, but lower, rate increases.

On the privatized side, in late 2008 the state Public Service Commission approved a rate increase for Missouri-American Water. The typical Missouri-American residential customer in Saint Louis County now pays $80.72 per quarter.[44] The average city household therefore would pay an estimated additional $62.20 per year in water bills if Missouri-American provided the service at the same rate charged in the county. Adding the 4-percent utility tax levied on that $62.20 would result in an average increase of less than $65 per household.

A few additional considerations might serve to reduce this figure somewhat. It is reasonable to assume that at least some cost efficiencies would be realized if Missouri-American were to provide water to both the city and county, even if only minor.[45] Also, housing lots in the county are larger than in the city, which can lead to a higher average cost for some specific forms of water usage, such as watering lawns. Finally, a transition between the city's current flat-rate residential billing system to the county's metered system would provide an incentive for customers to reduce usage. The present study will use an estimated increase of $65 per household per year, but the actual increase would probably amount to less than the 24-percent increase that $65 represents. On the other hand, Missouri-American filed a request with the Missouri Public Service Commission in October 2009 for another rate increase. If the PSC allows this, the price increase for customers of a privatized Saint Louis city water utility would be greater than $65.[46]

The introduction to the present study stated an assumption that the price of water in Saint Louis should compare favorably to that of other cities. This assumption is correct, according to the results of a nationwide price survey

A 1999 study by the National Association of Water Companies found that an assessment of 29 water utility privatizations demonstrated a cost savings of between 10 and 40 percent after privatization.

In 2006, utilities made up three of the four largest property taxpayers in the city.

conducted by the Memphis Light, Gas, and Water Division.[47] According to that survey, Saint Louis ranks ninth-lowest out of 27 cities on an average commercial water charge of 10,000 cubic feet per month. For a large commercial usage of 50,000 cubic feet, Saint Louis charges $546.12 per month, the seventh-lowest bill among the 27 cities included in the survey. For heavy industrial water users of 1 million cubic feet per month, Saint Louis again ranks highly in the survey, at number seven.

TAX COMPARISON

Customers in both the city and county pay a utility tax on each water bill. The 4-percent city tax generated $4.1 million in 2007, while the 5-percent county tax generated $1.9 million. The difference can be explained by the fact that the county only levies its tax on unincorporated areas, which contain little of the type of commercial and industrial base found in the city. If the city were to privatize its water division, little about these numbers would change beyond an increase in water rates, which would lead to increased utility tax revenues for the city. Given the earlier estimate of a 24-percent rate increase (undoubtedly on the high side), the increased utility tax revenues from those increased water rates would amount to an estimated $984,000.

Even more germane to the discussion is the amount of taxes paid by water utilities themselves, which in Saint Louis city is zero. Missouri-American Water Company paid $6.8 million in 2007 to various Saint Louis County governments for its total real estate and personal property taxes. It ranks as the seventh-largest taxpayer in the county, as measured by assessment. In fact, four of the top 10 property taxpayers in the county are utilities, if you consider AT&T to fit that category.[48] If the city privatized its water division, the assets would instantly become taxable, generating millions of dollars for the city each year in commercial property taxes. In 2006, utilities made up three of the four largest property taxpayers in the city (this figure once again includes AT&T).

Laclede Gas and AmerenUE also pay a half-percent payroll expense tax — which the city does not pay for its own employees — as well as the 1-percent corporate earnings tax. Missouri-American, unlike these other two utilities, is headquartered in the county. Even if it were to purchase the Saint Louis city water facilities, the earnings tax would not apply to all of its employees, but would certainly be in effect for profits earned within the city and on payroll for any employees who work at the Chain of Rocks Plant on the Mississippi River.

Saint Louis city values its water division holdings at $156 million.[49] Assuming that this figure is accurate for assessment purposes, it would lead to an estimated annual property tax payment of approximately $4 million.[50] A breakdown that lists which assets are in the city and which are in the county is not available, but at least two of the more valuable assets (the Missouri River Treatment Plant and Olivette reservoir) are located within the county. A conservative estimate would forecast $2 million in new property tax revenues for the city, to be split among city government, school districts, and special taxing districts.

Earnings taxes are currently levied directly on city employees, but a private

Table 1 — Breakdown of Estimated New Tax Revenues After Saint Louis City Water Privatization

NEW ANNUAL TAX REVENUES	ESTIMATED $
Increased utility taxes on charges	984,000
Property taxes	2,000,000
Payroll taxes	106,000
Corporate earnings taxes	28,000
Business license fee	30,000
Total	**3,148,000**

utility would be responsible for paying the payroll expense tax and corporate earnings tax. Based on budgeted salaries for 2008, and assuming that the substantial majority of employees for the current public water utility would be maintained, the payroll expense tax would bring $106,000 in revenues for the city. The Saint Louis city water division had an operating income of $2.8 million in 2007. Loosely equating this to the profit that a privatized utility might earn, this would yield an estimated corporate earnings tax of $28,000. Previous years have seen much higher operating incomes, such as $6.1 million in 2006. Finally, a private operator employing between 300 and 400 people would pay an annual city business license fee of $30,000.

Altogether, the city and its various government agencies, including the school district, would receive an estimated $3,148,000 annually in new tax revenues from a privately operated city water system. This estimate is higher than the amount transferred each year from the water fund to the general fund, which averaged $2,545,800 per year from 2004 to 2008.[51] Municipalities commonly use such annual transfers to justify public ownership, arguing that a public utility's profits accrue to the city, rather than to stockholders. However, this type of annual transfer does not constitute new city revenue, as would be the case with new taxes resulting from privatization, but is rather merely money that has been moved from one government fund to another. In some ways, that transfer amounts to a hidden tax, because Saint Louis residents pay $2,545,800 each year in user fees on their water bills — money that actually funds other areas of city government.[52]

USES FOR NEW CITY REVENUE

With a one-time lump sum payment of $300 million and estimated tax collection increases of $3,148,000 per year (split among multiple entities), Saint Louis could do a number of things for its citizens. The city could pay off debts, add new services, increase city worker salaries and benefits, build needed infrastructure, cut taxes, return the money to its residents through direct rebates, or any combination of these ideas.

Pay Off Debt

The city could pay off hundreds of millions of dollars in bond debt immediately. This would save the city additional millions on future interest payments. Along with the new tax revenues, this would give the city more freedom and flexibility in the future. Paying off all of the bonds is not possible on a short-term basis — the airport expansion project was simply too large — but paying off the city's general obligation and parking bonds is certainly possible, and could facilitate a reduction in the property taxes levied to cover debt payments, benefiting all taxpayers.

With a one-time lump sum payment of $300 million and estimated tax collection increases of $3,148,000 per year (split among multiple entities), Saint Louis could do a number of things for its citizens.

The city could also simplify the process by sending every man, woman, and child who lives within city limits a check for approximately $860.

Lower Taxes

The city could use its new revenues from the utility sale and newly taxable property to reduce taxes for its citizens and businesses. Show-Me Institute executive vice president and University of Missouri–Columbia economist Dr. Joseph Haslag wrote in a study for the institute, "How to Replace the Earnings Tax in Saint Louis,"[53] that the city could move toward eliminating its harmful earnings and payroll taxes. Targeting this new revenue as a replacement for the earnings tax — in combination with an increased land tax, as proposed by Dr. Haslag — would allow for a permanent elimination of the earnings tax, which would benefit the economy of Saint Louis. The sale proceeds, interest, and resultant new tax revenues would substitute for roughly two years of earnings and payroll tax revenues. Rescinding the earnings tax would also eliminate a significant marginal disincentive for businesses to locate within the city. The Saint Louis city economy would likely expand during this time, which would lead to greater property and sales tax collections. After that two-year period of equivalency ended, a land tax of the type described by Dr. Haslag in his study could suffice to replace any remaining lost earnings tax revenues.

However, the land tax rate that would be required to replace earnings tax revenue would almost certainly be lower after water division privatization than in the substitute levels calculated by Dr. Haslag in his study, thanks to overall growth that the city would see during its two years without either tax.

Increase City Employee Salaries and Benefits

Some city employees are likely due a reasonable salary increase. Residents might object, however, to using a lump sum payment solely for the benefit of government employees. Using sale proceeds to fund the city's long-term pension liabilities instead would benefit both city employees and taxpayers more fairly, and using new tax revenues to help pay for salary increases may be more politically viable.

Add New Services or Improve Existing Services

The Saint Louis transit system is one area of public investment that has experienced significant cuts recently. The city could use part of its lump sum payment for the water system to increase its funding for Metro (the area's transit agency), which could allow it to expand the MetroLink light rail system and replace bus routes that have previously been reduced or eliminated.

Invest in Infrastructure

Every city in the United States has significant infrastructure needs.[54] Using the initial lump sum payment for the Saint Louis water system to finance large capital projects, such as covering the downtown "depressed lanes" of I-70, could benefit the city's residents and businesses without requiring a tax increase. It could also generate economic activity that would also lead to an increase in government revenues.

Rebate to the Residents

The city could also simplify the process by sending every man, woman,

and child who lives within city limits a check for approximately $860. One benefit of using the influx of revenue this way is that true economic development results from individual people making individual choices with their own money. One drawback, however, would be that a significant portion of that $300 million would have to be turned over to the federal and state governments, as taxes on distributed income.

COMMON CARRIER NETWORK

A radical and rare, yet intriguing, proposal for Saint Louis might be a common carrier network, which is more typically seen with oil pipelines. This would be an option for consideration in the Saint Louis area if a private provider other than Missouri-American made the most attractive bid to operate the city's system. A piece written for *Water Resource Update* by Paul Seidenstat of Temple University[55] listed a number of requirements for such a system to work. Interestingly, Saint Louis meets all of those requirements.[56] A common carrier plan would involve multiple companies operating the treatment plants in the area, and all of them distributing water through the same pipe network. The pipe network operator, which could be an entirely different company from the ones operating treatment plants, would then distribute the water and charge customers based on usage, remitting payments to the original suppliers after subtracting its carrying fee. Such a system requires less regulation than other utilities, because multiple companies compete directly with each other to sell water to end users. The complicated issues involved with setting a future rate base would be rendered moot in a system that allowed market competition to counter fears of monopoly pricing.

Privatization alternatives for Saint Louis are, in some ways, unlimited. Any type of model can, and should, be examined and potentially altered in order to find the best fit for the city, the best deal for the taxpayers, and the highest water quality for the residents. Even a pure privatization model could be affected by any number of decisions, such as whether the city would impose an additional layer of regulatory oversight aside from the state's public service commission. A move toward complete privatization, though, is the only model that would generate an enormous up-front payment followed by ongoing new tax revenues that would allow the city to improve its financial situation significantly.

CONCLUSION

The city of Saint Louis should investigate the potential benefits that privatization of the water division would afford to city residents and taxpayers.[57] A private, regulated water utility would provide water services to the city just as efficiently as a private supplier does now for residents of the neighboring counties. No matter who owns and operates the city's water system, however, a metered billing system is much more efficient than the current flat-rate plan. Metering serves as an incentive to conserve water, and meters would more fairly apportion payments among city water customers, requiring residents who use the most water to pay for it.

Privatizing the Saint Louis water supply would significantly improve the city's financial situation, with substantial new sources of revenue that would be

Such a system requires less regulation than other utilities, because multiple companies compete directly with each other to sell water to end users.

A private, regulated water utility would provide water services to the city just as efficiently as a private supplier does now for residents of the neighboring counties.

available to be used in many creative ways. However, despite the many options that such a windfall might allow, determining and prioritizing those uses should come before any auction of the water division. It's important to craft a carefully conceived plan for how to spend the up-front payment from a privatization sale, so new revenues won't just be divided up and spent as spoils by individual elected officials.

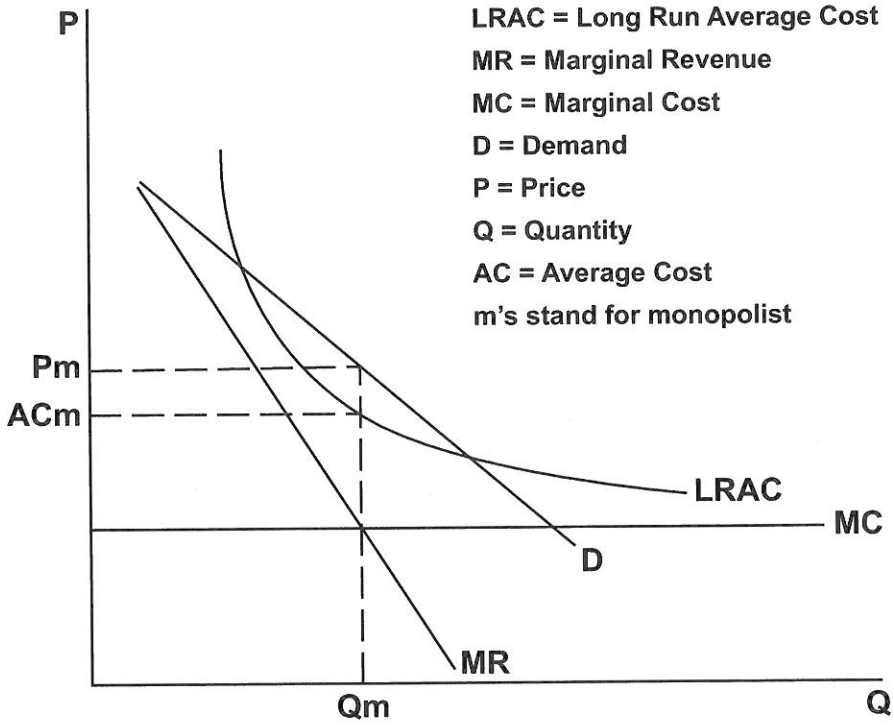
APPENDIX I

Natural Monopolies

In order to understand the economics of a water utility, it's important to become familiar with the concept of natural monopolies. Economist David R. Henderson provided this brief but illuminating explanation in *The Concise Encyclopedia of Economics:*[58]

> The main kind of monopoly that is both persistent and not caused by the government is what economists call a "natural" monopoly. A natural monopoly comes about due to economies of scale—that is, due to unit costs that fall as a firm's production increases. When economies of scale are extensive relative to the size of the market, one firm can produce the industry's whole output at a lower unit cost than two or more firms could. The reason is that multiple firms cannot fully exploit these economies of scale. Many economists believe that the distribution of electric power (but not the production of it) is an example of a natural monopoly. The economies of scale exist because

Figure 1 — Graph of a Natural Monopoly



another firm that entered would need to duplicate existing power lines, whereas if only one firm existed, this duplication would not be necessary. And one firm that serves everyone would have a lower cost per customer than two or more firms.

Whether, and how, government should regulate monopoly is controversial among economists. Most favor regulation to prevent the natural monopoly from charging a monopoly price. Other economists want no regulation because they believe that even natural monopolies must face some competition (electric utilities must compete with home generation of wind power, for example, and industrial customers can sometimes produce their own power or buy it elsewhere), and they want the natural monopoly to have a strong incentive to cut costs. Besides regulating price, governments usually prevent competing firms from entering an industry that is thought to be a natural monopoly. A firm that wants to compete with the local utility, for example, cannot legally do so. Economists tend to oppose regulating entry. The reason is as follows: If the industry really is a natural monopoly, then preventing new competitors from entering is unnecessary because no competitor would want to enter anyway. If, on the other hand, the industry is not a natural monopoly, then preventing competition is undesirable. Either way, preventing entry does not make sense.

APPENDIX II

Anheuser-Busch InBev Water Bill Assumptions

This study's rough estimate of the annual water bill for the Anheuser-Busch InBev Brewery in Saint Louis relies on series of assumptions that are detailed here.

- The brewery has an annual maximum capacity of 15.8 million barrels of beer.
- Each barrel of beer requires 20 barrels of water — seven new, and 13 recycled.
- A barrel holds 31 gallons, so each barrel of beer requires 217 gallons of new water that must be purchased from the water utility.
- A purchase of 217 gallons of water for each of 15.8 million barrels of beer amounts to 3,428,600,000 gallons per year. This further translates to 458,337,153 cubic feet of water.
- At a price of $0.84 per hundred cubic feet, 458,337,153 cubic feet of water would cost **$3,850,032.**

This estimated annual sum does not include slightly higher rates for the first two million cubic feet, nor quarterly charges based on the size of each water meter. These additional charges would be small, leading to an estimated annual water bill for beer production of **$3.9 million**.

APPENDIX III

Auctions

An auction would be the best method for determining the maximum sale price

Privatizing the Saint Louis water supply would significantly improve the city's financial situation, with substantial new sources of revenue that would be available to be used in many creative ways.

The primary advantage of the sealed-bid second-price auction for the city water division is that it provides a safety net against being the one bidder who wildly overvalues the utility.

of the Saint Louis water division. Because the value of the water division would be common to all bidders, and the information on which to base that value equally open to all bidders, the type of auction best able to maximize the bidding may be a traditional English auction.[59] One potential problem with this strategy is that only a small number of companies are capable of taking over the city water division. If only one bidder were to show up to the auction, they would bid the minimum start price and win. One way the city might resolve this problem is by starting with a sealed-bid auction in which bidders do not know the city's predetermined minimum selling price. The city could then invite the top bidders to an oral auction, where knowledge of how others value the water division might encourage bidders to raise their own offers.

Even though all the bidders in this scenario would have equal access to the same information, in this instance that information is probably not as revelatory as business purchasers usually desire. The problems inherent in properly estimating both the value of the city water utility and the future rate base set by the public service commission might favor the use of a sealed bid second-price auction, rather than an English auction. In this style of auction, which is heavy on theory and light in practice, the highest bidder wins — but the winner must pay only the second-highest bid amount. The primary advantage of this type of auction for the city water division is that it provides a safety net against being the one bidder who wildly overvalues the utility. Bidders might be *more* likely, not less, to value the utility aggressively if they know they will not be penalized for basing their bid on research that is significantly out of line with other bidders. Determining which of these two styles of auction is more appropriate for the Saint Louis water division would depend greatly on how much public valuation is performed before the auction, such as estimating the rate base.

The city would also have other options in arranging an auction of the water division, all of which would help work toward a goal of maximizing revenues while ensuring that the winning company is capable of successfully operating the city's water utility.

APPENDIX IV

Valuing the Saint Louis City Water Division

Based a book value of $160 million and annual revenues of around $44 million, it is possible to arrive at a simplified estimate of a sale price for the Saint Louis city water division. For many businesses, the earnings multiplier serves as the starting point for a sale price.[60] However, large water utilities are not sold very often. A conservative sale price might set the multiplier at three times the earnings, plus the value of the capital assets, minus the assumed debt. That would lead to a sale price of $259 million. Leaving aside the value of the assets, this number would be roughly in line with the per-capita amount that Missouri-American paid Florissant for its water system in 2001.[61]

When selling a regulated monopoly, the earnings multiplier could be higher than in other industries, given that a water utility's customer base does not have the option of buying its water elsewhere.

For pure utilities (gas, electricity, water), this makes economic sense.[62] However, the rate base is more important a factor than any earnings multipliers we might consider.

How much would an auction of the city's water division to private operators yield for the city? Unfortunately, only loose estimates can be calculated. There are far too few comparable examples of the sale of systems of this size, both in terms of facilities and customers served. Sale prices in recent years for water utilities in suburban Saint Louis areas have had nowhere near the industrial and commercial base of the city. Neither have they involved the purchase of such substantial equipment as two major treatment plants. Sales in other states can involve the distribution of wastewater, as well, which will increase their comparative prices. An estimated bare minimum value of $300 million seems appropriate. This figure is consistent with the per-capita price of Florissant's water privatization, disregarding the value of facilities and both commercial and industrial customers. However, this figure likely underestimates the value of those industrial and commercial customers by a significant margin, and fails to account for inflation.

An estimate of $400 to 450 million would better reflect the cost of inflation, the tremendous desirability of commercial customers such as Anheuser-Busch InBev, increases in the daytime population of downtown Saint Louis, and increases in the evening population for sports venues and concert halls. This $400 million estimate is close to the per-customer price of the Webster Groves water utility sale, while the $450 million price is close to the value of the Trenton sale — again disregarding the value of the facilities and a range of $90 to $100 million for the type of commercial and industrial customers that exist in Saint Louis, which did not have a significant presence in the Webster Groves or Trenton exchanges.

What if the city's valuation of $156 million is close to the eventual rate base figure? That valuation number is at least known to potential bidders, and could be a significant deterrent for high bids. In 1958, the city attempted to ascertain the value of its water assets "based on an engineering study of the historical cost of properties constructed by employees of the Water Division."[63] This is very close to what would be required in order to set a rate base. However, the city has depreciated many of its water assets over time to a level that is likely far below actual value — which is not a criticism, but a recognition of standard government accounting practice. The city clearly states that it depreciates the value of capital assets over their estimated useful lives, which it says is 44 to 55 years for buildings and structures. So, treatment plants still in use today that were built more than 55 years ago — this applies to both of the Saint Louis plants — have probably been depreciated far below their actual market value.[64] The size of this excessive depreciation is obvious when you note that the city values its buildings and structures at only $19 million. This figure includes two large-scale, fully functional water treatment plants that would probably cost at least $200 million to build from scratch today.[65]

Which values would the PSC use in calculating the rate base, which would determine the size of bids for the

For the purposes of this study, a conservative estimate of $300 million seems justified.

Research by Lisa Maddaus has determined that a transition to water meters consistently reduces usage from 10 to 30 percent.

utility? Would it use the city's current heavily depreciated values? Would it use replacement values? This is impossible to know, but the city's current financial accounting — while perfectly valid for financial reporting purposes — significantly underestimates the water division's market value and would not serve as an accurate foundation for a future rate base.

For the purposes of this study, a conservative estimate of $300 million seems justified. This is less than the average asset valuation of a typical Class A-1 water utility, $360 million.[66] An auction could well result in a selling price of more than $300 million. I do not think the actual figure would be lower, though, and if it were much lower the utility might not be worth privatizing. If the city chooses to investigate the potential for a sale, it should first contract with an independent water valuation expert to determine the most accurate value of the water system in its entirety, and the value of its individual parts.

Worst-Case Scenario

It is possible that the overall condition of the city water division's infrastructure could be so old and worn that no investor would be willing to pay for it. In that case, the value of the city's water division would be significantly lower than even a conservative $300 million estimate. If that were true, though, privatization would be even more necessary for the city. If the city water division, possibly hamstrung by politicians hesitant to make people pay what they need to for water, has allowed the city's water infrastructure to deteriorate to the point that it is almost worthless, why should that system continue? This is mere conjecture, and probably not at all the case, but if that possibility turned out to be true, it would be all the evidence necessary to show that municipal ownership had not worked.

In such a worst-case scenario, the city would eventually need to choose between privatization and a major increase of either taxes or water prices in order to pay for a complete overhaul of the system. In this drastic case, the privatization model would less likely involve taking over existing city facilities and more likely involve an emphasis on cost savings by closing them and using other facilities instead. (Obviously, some facilities like the substantial piping system would have to be kept and repaired.) It is hard to imagine a private provider other than Missouri-American having the capability to step in if this turned out to be the situation. However, the city's customer base would still hold value, and a private provider would be willing to pay the city to serve that market. In this instance, regulation by the PSC — which can guarantee a return on any necessary investment — might work in favor of potential investors.

APPENDIX V

Water Meters

The city water division still, inexplicably, charges many residential customers based entirely on set fees and home size, etc., and has never set up most of its customers with water meters. Many other water providers transitioned to meter-only billing decades ago. Kansas City's water division uses only water meters for its billing and charges. In 2007, Kansas City began a process of replacing

its manually inspected meters with radio transmitters, which provides an even more accurate and efficient billing system.

The use of water meters has had a significant demonstrated impact on water conservation. A study by William O. Maddaus for the United States Department of Housing and Urban Development[67] found that the switch from flat-rate pricing to water meters resulted in a 20-percent reduction in water use. Similarly, research by Lisa Maddaus has determined that a transition to water meters consistently reduces usage from 10 to 30 percent.[68] It is possible that the higher costs of privatized residential water provision could be offset in part by reduced water usage, as long as the new private provider switched to a metered billing system. From a conservation perspective especially, there is no more obvious improvement to the city's water system.

The lack of water meters is one reason — in addition to the tax advantages that a public utility enjoys — that the city water division can charge less than Missouri-American does in the county. The Feigenbaum and Teeples study cited earlier identified two meter-related cost functions.[69] Utilities that charge unmetered rates have lower costs than utilities that provide metered water. Conversely, utilities that have a large number of small, metered users have higher costs than those with a few large metered users.[70] The city water division takes advantage of both categories: It provides unmetered service to most of its customers (i.e., residential), while it meters its larger commercial customers. Missouri-American Water meters all of its customers, including a large number of single-family homes.

Disclosure: The author of this study, David Stokes, owns shares of stock in American Water Works Company, Inc., the parent company of Missouri-American Water.

NOTES

1 **Missouri State Auditor, "City of St. Louis Department of Public Utilities," Audit Report 2010-34, March 2010. In March 2010, the state auditor's office completed an audit of the Saint Louis water division, released too recently for its details to be fully incorporated into the present study. Suffice it to say, however, that the audit rased only minor concerns that were indicative of a well-run public utility.**

2 **Holland, Elizabethe, "Best-rated fire services are far from the best-paid," *St. Louis Post-Dispatch*, Aug. 21, 2004.**

3 **Mackinac Center for Public Policy, "Michigan Privatization Report," No. 2000-04, p.14. Online here: tinyurl.com/23cejjb**

4 **Feigenbaum, Susan, and Ronald Teeples, "Public Versus Private Water Delivery: A Hedonic Cost Approach," *The Review of Economics and Statistics,* Vol. 65, No. 4, Nov. 1983. The authors determined that economies of scale for water costs were exhausted at approximately 45 billion gallons per year. The Saint Louis city water division averages 49.6 billion gallons per year, so limited opportunities for economies of scale might be available to the city water division.**

5 **Some outlying areas in Saint Louis County still primarily use septic systems, and are not within the Metropolitan Sewer District's territory.**

6 **Two suburbs, Kirkwood and Eureka, continue to maintain their own water distribution systems. Kirkwood buys its water wholesale from Missouri-American, while Eureka is the only municipality that still operates its own water and sewer system. A very small number of people in the extended parts of Saint Louis County also use well or spring water instead of Missouri-American's system.**

7 **Clark, Robert M., "The Cost of Water Supply and Management," U.S. Environmental Protection Agency, Nov. 1977, p. 10.**

8 **According to information published on the city of Saint Louis Water Division website. Online here: stlwater.com/treatment.php. This figure represents maximum capacity. The daily average for the city of Saint Louis is 136 million gallons per day, according to an email message sent to the author by a representative of the city water division.**

9 **The terms "private" and "investor-owned" are used interchangeably in this study.**

A study by William O. Maddaus for the United States Department of Housing and Urban Development found that the switch from flat-rate pricing to water meters resulted in a 20-percent reduction in water use.

10 "Privatization of Water Services in the United States: An Assessment of Issues and Experience," Water Science and Technology Board, Committee on Privatization of Water Services in the United States and the National Research Council, 2002. Online here: tinyurl.com/2vf956c

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14 Raffiee, Kambiz, Rangesan Narayanan, Thomas R. Harris, David Lambert, and John M. Collins, "Cost Analysis of Water Utilities: A Goodness-of-Fit Approach," *Atlantic Economic Journal*, Volume 21, No. 3, September 1993, pp.18–29.

15 Bhattacharyya, Arunava, Thomas R. Harris, Rangesan Narayanan, and Kambiz Raffiee, "Technical Efficiency of Rural Water Utilities," *Journal of Agricultural and Resource Economics,* vol. 20, no. 2, 1995, pp. 373–391.

16 Bhattacharyya, Arunava, Elliott Parker, and Kambiz Raffiee, "An Examination of the Effect of Ownership on the Relative Efficiency of Public and Private Water Utilities," *Land Economics*, vol. 70, no. 2, May 1994, pp. 197–209.

17 Dr. Susan Feigenbaum is now a professor of cconomics at the University of Missouri–St. Louis, and is on the Show-Me Institute's board of scholars.

18 Feigenbaum and Teeples, p. 677.

19 Segal, Geoffrey, and Adrian Moore, "Frequently Asked Questions About Water / Wastewater Privatization," Reason Foundation, Sept. 2003.

20 Beecher, Janis, "Privatization, Monopoly, and Structured Competition in the Water Industry: Is There a Role For Regulation?" *Water Resources Update*, no. 117, Oct. 2000, pp. 13–20.

21 Ibid., p. 16.

22 This has happened in some places, however, such as Atlanta.

23 The city water system is the emergency backup for the county's water supply, and vice versa, but the city does not have the capacity to serve the county's water needs beyond a short-term emergency. The average summer daily consumption from Missouri-American water customers in the county is 248,640,000 gallons per day, according to the 2007 Saint Louis County Factbook.

24 Beecher, p. 16.

25 Ibid.

26 Ibid., p. 14.

27 It is unclear why Webster Groves received more per person than Florissant or Kirkwood. Perhaps the presence of Webster University's main campus and its thousands of students — most of whom are commuters and not accounted for in population totals — played a part in the higher sale price.

28 According to information published on the Anheuser-Busch website. Online here: tinyurl.com/25o3xwe

29 This number is for the 2008–09 season. It changes slightly from year to year.

30 There are 968 public toilets at the Edward Jones Dome alone.

31 According to information published on the Massachusetts Water Resources Authority website. Online here: tinyurl.com/23r32qh

32 According to information published on the U.S. Department of Energy website. Online here: tinyurl.com/2bxz863

33 Some functions, such as urinals, could still make use of recycled water.

34 Hospitals, and other nonprofit entities, receive discounted water prices by the city. Whether that arrangement would continue under private operation is unknown. The city could makee this a condition of sale.

35 Ambrose, Robert, and J.M. Mussman, "Water System Valuations and the 'Market,'" *Water Resources Update*, no. 117, Oct. 2000, p. 9.

36 According to information published on the city of Saint Louis Water Division website. Online here: stlwater.com/history.php

37 "Comprehensive Annual Financial Report," city of Saint Louis, Mo., Office of the Comptroller, 2007.

38 National Research Council, "Privatization of Water Services in the United States," 2002, p. 86.

39 Tracy, Ryan, "Trenton Water Plan has Suburbs Boiling," *The New Jersey Times*, Sept. 21, 2008. The woman quoted is Wenonah Hauter, executive director of Food & Water Watch.

40 This is not to suggest that the city water division has failed to invest in its infrastructure — that is a primary purpose of water bonds. Rather, the city could legally underprice water to its residents if it chose to do so, and historical evidence shows

that many public utilities have done exactly that. Source: Saint Louis City Charter, Article XIII, Section 11. Online here: tinyurl.com/2ebpy3o

41 Davis, Robert, "Let's Privatize Water Resource Supply," *Water Resources Update*, no. 117, Oct. 2000, p. 45.

42 "Privatization of Water Services in the United States: An Assessment of Issues and Experience," Water Science and Technology Board, Committee on Privatization of Water Services in the United States and the National Research Council, 2002, p. 77. "Privatization" here does not necessarily mean that a utility was sold.

43 According to an email message sent to the author by a representative of the city water division on Oct. 27, 2009.

44 According to information published on the American Water website. Online here: tinyurl.com/3xcnuby

45 As stated in note 3, both the city and county water companies exceed 45 billion gallons per year, the level at which economies of scale are exhausted according to Feigenbaum and Teeples. However, the close proximity of two major water treatment plants next to each other on the Missouri River offers a unique opportunity for cost savings that might not have been foreseen by the Feigenbaum and Teeples study.

46 "Missouri-American Water Seeks Rate Hike," *St. Louis Business Journal*, Oct. 30, 2009. At the time of this writing, it is too early to know whether the rate request will be approved, modified, or rejected.

47 Unfortunately, the survey did not include Saint Louis County. The survey's rankings of residential rates in the city are not accurate, because most residences are charged at a flat rate while the survey only included metered rates. The city currently has 95,000 customers; 8,000 commercial customers are usually metered, while 87,000 residential customers are generally charged a flat rate.

48 According to 2007 Saint Louis County taxable assessed value rankings.

49 The present study has already noted the inaccuracies of this total for any purpose other than financial reports. It may or may not be an accurate valuation of the city's assets for property tax purposes, but it is the only valuation available.

50 Based on the 2009 city property tax rate of $8.2865 per $100 of assessed valuation.

51 "Comprehensive Annual Financial Report," city of Saint Louis, Mo., Office of the Comptroller, 2004–2008.

52 Section 23.38.010 of the Saint Louis City Revised Code directs 10 percent of the gross receipts of the water fund to be transferred out of the water department, 6 percent to be transferred to general revenue, where a portion must be used for street projects, and 4 percent to be "passed onto the customer." The practical meaning of this latter phrase is ambiguous, but it may relate to the fee that the collector of revenue receives for collecting water bills, an amount also totaling 4 percent. Online here: tinyurl.com/2duabkq

53 Haslag, Joseph, "How To Replace The Earnings Tax In Saint Louis," Show-Me Institute, Policy Study no. 5, Jan. 2007.

54 The 2009 federal stimulus plan may implement every proposal ever conceived, thus making this idea moot.

55 Siedenstat, Paul, "Emerging Competition in Water and Wastewater Industries," *Water Resources Update*, no. 117, Oct. 2000, p. 8.

56 Those factors are: 1) A relatively large market area; 2) suitable sources of supply and locations for multiple treatment plants; and, 3) comparable water quality from the competing treated water suppliers.

57 The city charter prevents the Board of Aldermen from selling, leasing, or disposing of the waterworks. Any attempt to enact any of the changes proposed here would have to be approved by the people of Saint Louis, either by a direct vote or by a charter amendment authorizing the board to sell or lease the waterworks. Source: Saint Louis City Charter, Article IV, Section 26. Online here: tinyurl.com/2ehfwam

58 Henderson, David, "Natural Monopoly," *The Concise Encyclopedia of Economics*, 2nd ed., 2008. Online here: tinyurl.com/2c3mle6

59 Fine, Leslie R., "Auctions," *The Concise Encyclopedia of Economics*, 2nd. ed., 2008. Online here: tinyurl.com/282gmm8

60 Earnings multipliers are only rules of thumb, and vary substantially between different types of businesses and differing financial situations. A multiplier of "3" is a conservative estimate designed to provide the opportunity for comparisons.

61 The use of per-capita numbers should capture the value of assets included in smaller municipal privatizations. According to Missouri-American Water, there were no significant asset transfers in the Florissant or Webster Groves water system privatization exchanges, i.e., no treatment plants or reservoirs.

62 This is less sensible for other industries that are often treated and regulated as utilities, such as cable television.

63 "Comprehensive Annual Financial Report," city of Saint Louis, Mo., Office of the Comptroller, 2008, p. 43.

64 Hayward, David, "Water Utility Valuation:

Beyond the Dartboard Approach," *Business Appraisal Practice*, Spring and Summer 2006. According to Hayward, it is common for water utility plants to be nearly fully depreciated, one of many difficulties inherent in valuing water utilities.

65 The city of Winnipeg calculated in 1999 that it would cost $204 million to construct a new water treatment plant for the city. See online: tinyurl.com/24qlseh

66 Hayward, p. 1.

67 U.S. Department of Housing and Urban Development, "Residential Water Conservation Projects — Summary Report," Report No. HUD-PDR-903, preparedby W.O. Maddaus of Brown and Caldwell Consulting Engineers for the Office of Policy Development and Research, 1984.

68 Terrebonne, Peter, "Residential Water Demand Management Programs: A Selected Review of the Literature," Water Policy Working Paper #2005-002, Jan. 2005, p. 6.

69 Feigenbaum and Teeples, p. 675.

70 The Feigenbaum study was written in 1983, when every meter was read by people traveling between homes on foot — obviously a significant cost. Technology has reduced the costs of meter reading by gradually eliminating the role of meter readers, and should eventually eliminate or greatly reduce any implementation cost differences between meters and flat-rate water.

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