CHALLENGES IN REINTRODUCING FAIR MARKET VALUE TO U.S. PUBLIC DRINKING WATER SYSTEMS

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ABSTRACT

This paper analyses the debates around the shift in water system valuation from the traditional book value-based system towards a market-driven exchange approach called Fair Market Value (FMV). FMV legislation was first introduced in California in 1997 and has been introduced in the past decade in 12 additional states. What is driving this shift in state policy and what does it mean for our understanding of value? Based on a review of the FMV acquisition process, this paper explores the debates around this shift in water system valuation drawing on historical court cases, case studies acquisitions, and a review of public utility commission documents, legislative transcripts, court cases and statutes. The paper finds that FMV is a boon for regulated utilities and elected officials seeking to exchange public water and wastewater systems for windfall profits paid for through higher customer rates. FMV challenges conventional regulatory ratemaking and will undoubtedly spur discussion on the future of public asset valuation and implications for equity and affordability.

BIOGRAPHICAL SKETCH

Thomas McKiernan is from Tappan, New York, and is pursuing a Master of Regional Planning at Cornell University. He is interested in state and local government, the intersection of policy and planning, and infrastructure as a tool for economic development and sustainability. Thomas graduated from the State University of New York at Binghamton with a Bachelor of Arts in Geography.

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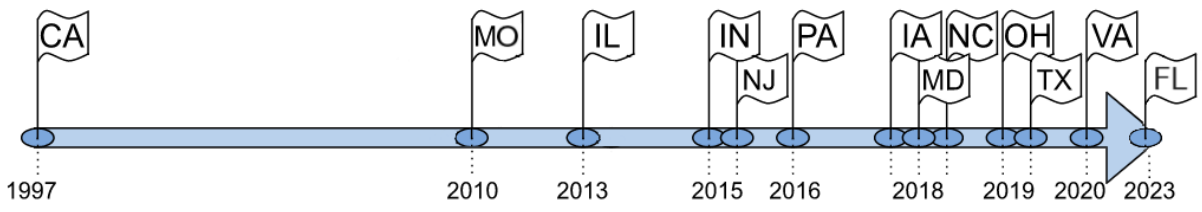
FMV – Fair Market Value
MAWC – Missouri American Water Company
USPAP – Uniform Standards of Professional Appraisal Practice

INTRODUCTION

In recent years, media attention on high-profile water system mismanagement in Flint, Michigan, and Jackson, Mississippi, has prompted the public to reconsider the importance of water service. Many customers only appreciate the reliability and quality of their own providers after hearing of disasters like these; however, there are thousands of water systems across the country in need of repairs. When these systems are acquired by investor-owners, regulators must determine what portion of the purchase price can be recovered through higher rates. These decisions are influenced by policy, precedents, and a concept called *value*!

Since the 1950s, US public drinking water systems have been sold based on an original cost minus depreciation accounting approach, or book value. California shifted to a different system for valuing public drinking water systems, called "Fair Market Value," in 1997, to encourage consolidation and investment (Public Water System Investment and Consolidation Act, 1997, see Table 1). Beginning in 2010, twelve additional states followed suit in adopting new valuation approaches. As of 2024, thirteen states now utilize an alternative fair market value for acquisitions (see Figure 1).

Figure 1: Timeline of Fair Market Value Adoption in the United States



Source: Author Analysis

What actors and incentives are driving this shift? Both private investors and consumer advocates alike argue that this new valuation policy will facilitate the purchase of water/wastewater systems by private actors (Gallos, 2021; Connors, 2022). Why? This recent round of "fair market value" (FMV) laws streamline the acquisition and ratemaking process in state public utility codes and make system sales more favorable to potential buyers and sellers. Private companies have lobbied for the passage of this legislation, and dozens of local governments in active state markets (Pennsylvania, Missouri, and Illinois) have sold their water systems for prices far higher than those obtained under the standard book value approach (Kennard, 2023). While state laws have varying system eligibility requirements, the sale of municipal water/wastewater systems represents a potentially large new market for investors.

How is fair market value determined? FMV laws benefit owners as they generally increase the price for which their water/wastewater systems sell and benefit buyers by allowing higher sale prices to be recovered through increased rates. Previously, utilities negotiated a purchase price and relied on the book value (cost minus depreciation) as the ratemaking cost-recovery standard (Regulated Utilities Manual: A Service for Regulated Utilities, 2012). This value is typically less than "fair market value," but it ensured that the customers would not be charged again for investments already made through their tax dollars. For example, older systems may have completely amortized the cost of their original investments, resulting in a book value of zero. However, many assets continue to operate for years after they are completely amortized on the balance sheet.

What does the FMV shift mean for broader understanding of the public value of municipal drinking water systems? Since the creation of statewide public utility

commissions in the early 20th century, court opinions have clarified the rights of customers and owners, attempting to maintain a balance between the needs and interests of water/sewer service providers (regulated utilities) and their customers (ratepayers). Although once upheld as the standard for ratemaking, the Supreme Court rejected the similarly-interpreted fair value standard in 1944 after decades of disputes failed to define what costs are permissible to recover through a utility's rate base (*FPC v. Hope Natural Gas Company*, 1944; Hale, 1944). These new FMV laws re-introduce market value into regulatory ratemaking. Value exists in the monopoly market position gained by the acquirer and the expected future rates approved by regulators. The guaranteed returns through rate-recovery at purchase makes these investments less risky under "fair market value" regulations.

This thesis explores these three questions: How is fair market value calculated? What actors and incentives are driving this shift? and What does FMV mean for broader understanding of the public value of water/sewer systems? To explore these questions, I use court documents, case examples, and review of regulatory and legislative documents. This thesis raises questions for planners, elected officials, system operators, public regulators and consumers.

LITERATURE REVIEW

2.1 What is Unique About Water?

Piped water, whether it is privately or publicly owned, is a classic example of a natural monopoly. High fixed costs of water infrastructure lead to economies of scale (declining average costs) such that one firm best serves the whole market. Were it not for the durability and immobility of this infrastructure, firms might be subject to "hit and run" threats from competitors seeking to undercut their way into the market. José Gómez-Ibáñez describes competition in this industry as "... a punishing price war that ends with either the challenger or the incumbent losing its investments" (2003). Without intervention, the winner of that war becomes the sole water provider in their service area and could charge customers monopoly prices.

Luckily, there are several solutions to the natural monopoly problem. The most common solution in the United States is the public provision of water delivery services. Approximately 90% of U.S. households served by a community water system receive it from the government (*What's the Addressable Market for Water Utility Consolidation?*, 2023). Some benefits of this approach include the government's ability to shape outcomes related to access, equity, and development. Additionally, governments can, in theory, leverage their taxing power to complete projects that offer high social returns but low expected cash flows. Conversely, private owners are typically unwilling to initiate projects with no monetizable flows.

Nonetheless, millions of households receive water from investor-owned companies. As of 2022, approximately 7% of the U.S. population was served by an investor-owned utility company (*Investor-Owned Water Utilities: M&A, Market Share, and Competitive*

Strategies). This leads to a second potential solution to the natural monopoly problem: discretionary regulation. To avoid a winner-takes-all outcome, state regulatory commissions determine the revenue that must be collected in rates for the utility to recover its operating costs and earn a reasonable return on invested capital. Accompanying this rate regulation, the government grants a geographic monopoly ("franchise") to the firm. Over time, the state and federal courts systems have shaped the expectations of these commissions and its investor-owned water partners to avoid opportunistic behavior from either party, thus guaranteeing both the integrity of the regulatory relationship and the provision of safe, reliable drinking water.

Firms recoup their investment over a regulator-set amortization period. The yet-to-be-depreciated value of the original cost of capital investments is referred to as the *rate base*, which is eligible to receive a reasonable return. Several safeguards ensure that this return on invested capital does not unilaterally transfer all risky investments onto customers. Case law requires that rate bases only include "used and useful" investments and provides regulators the discretion to exclude imprudently incurred investment costs if those costs do not impede the firm's access to future capital (*Duquesne Light Co. V. Barasch*, 1989).

Unlike regulated utilities, government-owned water utilities generally set their own rates without regulatory oversight. This creates issues when operators fail to conduct preventive maintenance simply to avoid raising rates. Poorly-run public systems face the real possibility that their revenues do not support their costs, thereby further restricting their access to capital markets (Arnold, 2008; Young, 2023). When investment does occur, those investments are funded through bonds, the cost of which is amortized through taxes. The

system's *book value* is the not-yet depreciated cost of those investments and is conceptually akin to rate base without the constitutionally required return on investment.

2.2 Regulation and Private Participation in Water

Regulatory commissions are the ultimate barrier to private firms charging monopoly prices; thus, it may come as a surprise that private utilities spearheaded their creation. During the late 19th and early 20th century and before reliable regulatory commissions existed, there was a rapid increase in public ownership of water systems facilitated by municipal debt and high demand for clean, safe water (Cutler and Miller, 2005). Some newly-constructed systems undercut private systems, lowering their rates below profitable margins and subsidizing losses out of tax revenue to drive out private competition (Crocker & Masten, 2002; Troesken, 2006).[1] Similarly, both private owners and contractors found themselves vulnerable to shakedown schemes by municipalities. Firms became skeptical of public-private partnerships demanded additional contractual protections, which ultimately led to high transaction costs and further diminished the private sector's once-dominant role in water infrastructure management (Crocker & Masten, 2002; Troesken & Geddes, 2003). Between 1907 and 1922, nearly thirty states created statewide commissions to regulate public utilities in part due to lobbying by utility companies to receive fair treatment (Troesken, 2006).

The early years of discretionary regulation were defined by an absence of stability that might have prevented the pendulum of opportunistic behavior from swinging in the opposite direction. As regulators and the courts tried to find stable footing in the 1920s and

[1] This is a historic example of Gómez-Ibáñez's theory of "hit and run" competition that accompanies natural monopolies.

30s, utilities were frequently bought and sold at high premiums with the sole intention of recovering this inflated cost through ratepayers (Hempling, 2020). In 1928, the Federal Trade Commission investigated the abuses of electric industry companies to find that intentional accounting irregularities associated with acquisition write-ups resulted in a $1.6 billion overstatement of the value of electric utility plant (approximately $28 billion in 2024) (Litke, 1965). The adoption of original cost in public utility accounting became the uniform solution to this abuse (Schumacher, 1966). This required that all other acquisition costs aside from original cost (the only capital devoted specifically to the public service) be subject to the discretion of regulators and it set the stage for their future exclusion of acquisition premiums from rate base recovery.

Therefore, the rate of return provided to regulated utilities represents fair compensation for risks taken by private investors, but it also represents a compromise between the government and private sector premised on several decades of opportunistic behavior by both parties. This compromise protects millions of consumers, and it is critical to uphold regulatory precedent at risk of undermining this delicate balance.

2.3 Conflicting "Values"

The public service missions of government water enterprises and investor-owned companies should strongly align, but this should not be confused with the value they place on their assets. Investor-owned companies are performing a public service by devoting their property, which they either own or built themselves, to provide water service to customers. As they expand and upgrade their systems, the projects they undertake to satisfy their public service obligation also carry risks for which they expect to be compensated. They have a

rightful claim to this compensation, but this regulatory relationship conceives an exchange value not intrinsic to public enterprises: a guaranteed future profit stream through rates and an exclusive geographic franchise.

With the increasing financialization of infrastructure in the last few decades, scholars have given renewed attention to alternative conceptions of value. In the case of publicly-held asset sales, how much value should be based on the stock—original cost and investment in the asset—versus the flows—the tolls or other benefits that come from the asset? How much of this value should be recouped directly by private investors?

Private investors often value infrastructure for the flows it can generate, in addition to its actual investment cost. However, traditional book value definitions typically only include investment minus depreciation (stock). Municipal officials can underestimate the value of future revenue flows, and this has caused local governments to sometimes sell systems for too little, as in the case of Chicago's sale of its parking meters (Ashton et al., 2021). Scholars have attempted to prepare public owners to work with private partners on infrastructure development and management by incorporating market-driven financial principles into government cost-benefit analyses (Lucas and Jimenez Montesinos, 2021; Detter and Fölster, 2017).

Nonetheless, reconciling market values driven by profit-maximization with book values intended to *limit* customers' rates is not an easy feat. While significant price differences between public and private operation have not been found (Bel et al., 2010; Tortajada et al., 2013), private involvement in water infrastructure has raised questions about the balance between affordability, equity, quality and efficiency (Bakker, 2001). The dependence on elected officials and regulators to make decisions about these variables for

diverse constituencies complicates the balance between these variables; receiving one often means sacrificing another!

Similarly, economists have cautioned against privatization in this sector, absent strict regulation, due to its tendency to demonstrate natural monopoly characteristics (Meggison, 2005; Bel, 2021). Nonetheless, water and sewer systems are gaining increasing interest among consumers, regulators and investors in the US (Gallos, 2021; Connors 2022). Companies like American Water view the US municipal drinking water sector as an area ripe for new private investment (AWWA, 2023) and with the new federal infrastructure bill, more investment will be possible (Grigg, 2022). To make a more attractive market, private investors and some legislators have encouraged new "fair market value" legislation at the state level, and that is the focus of this paper.

Even as fair market value creates the conditions for apparent "win-win" deals between elected officials and regulated utilities, the higher acquisition costs represent the recent embrace of a ratemaking practice formerly disavowed by regulators to protect ratepayers. This paper does not determine if the benefits of investor ownership translate to better service that would offset increased rates, a scenario where there truly may be no losers, but it does focus on the fair market value process to better understand the sources of value for which customers are being charged.

METHODOLOGY

This paper explores the factors driving the reintroduction of FMV, how to determine fair market value, and FMV's impact on regulatory ratemaking.

I begin with a review of the historical legal precedent for FMV as established through critical court precedents related to fair value. While FMV legislation is new in 12 of the 13 states analyzed here, the debate has been a subject in the courts for over 100 years, due to the difficulties in determining valuation.

Next, I present a comparison of two recent system acquisitions—one using traditional book value in New Hartford, Connecticut, a state which rejected FMV legislation, and the other using the new fair market value approach in Oak Park, Illinois—to demonstrate the differences across regulatory jurisdictions.

Then, I provide a comparison of state policy drawing on legislative records and public testimony during bills' movement through state legislatures. This enables me to explore the nuances of FMV in the ratemaking process and the motivations for its reintroduction.

While Oak Brook, Illinois, and New Hartford, Connecticut provide representative examples of two differing processes, they do not reveal the depth of potential conflicts that arise under FMV acquisitions. The final case study of Eureka, Missouri, helps answer the yet unaddressed question, "How might fair market value challenge the established precedents of cost-of-service ratemaking?" Atypical or extreme cases like Eureka reveal more information as they activate different actors and/or mechanisms than typical cases (Flyvbjerg, 2006). Eureka is an atypical case as debate between advocates creates lines of inquiry into the core issues surrounding the regulatory response to fair market value. Eureka,

therefore, answers both the practical question asked above and encourages further theories and hypotheses on the policy.

Finally, the paper turns to the discussion of the implications for conceptions of value, what this means for ratepayers, and questions that can be answered through future research.

ANALYSIS

4.1 Legal History of Definitions of Value

Fair market value was the rate base value standard up until the early 20th century. In *Smyth v. Ames* (1898), the Supreme Court enumerated "fair value" determinants on which they deemed public utilities eligible to receive a return ("rate base"). These factors included:

> …the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses… (*Smyth v. Ames*, 1898)

This case set the precedent for utility valuation over the next 50 years; however, it attracted controversy. Justice Brandeis famously voiced his dissatisfaction with the use of fair value to determine a regulated utility's rate base (*SW Tel. Co. V. Pub. Serv. Comm.*, 1923). He argued that the Federal Constitution guarantees a return on a utility's invested capital, not on the value of all the property it holds. Brandeis railed against fair value as legally and economically unsound—arguing it encounters a "vicious circle" where a company's value is determined by capitalizing earnings that are a function of its regulated rates—and referenced expert valuations that vary by millions of dollars.

In describing this vicious cycle, Justice Brandeis took issue with two valuation approaches that are frequently used in modern fair market value appraisals: the market and income approaches (which I will describe in more detail later). He reasons that they must not be included in determining value, saying "It is impossible to find an exchange value for a utility, since utilities, unlike merchandise or land, are not commonly bought and sold in the market. Nor can the present value of the utility be determined by capitalizing its net

earnings, since the earnings are determined, in large measure, by the rate which the company will be permitted to charge…" (*SW Tel. Co. V. Pub. Serv. Comm.*, 1923).

Though only one other Justice signed on to his opinion at the time, Justice Brandeis would be vindicated twenty years later when the Supreme Court rejected the fair market approach (*FPC v. Hope Natural Gas Company*, 1944). Rather than producing a prescriptive formula to determine a fair rate base, the Court endorsed an "end results" test, where the rate of return should allow the utility to operate successfully, maintain its financial integrity, and compensate its investors. Prior to the *Hope* ruling, only four states used rate bases in line with book value, but in the decade that followed, an additional 27 states adopted book value as their preferred method (Bottomly, 1960). This was reinforced through *Duquesne Light Co. v. Barasch (1988)*, which only allows for recovery of capital prudently devoted to the utility enterprise.

As "fair market value" is emerging today, it emulates the older historic fair value standard. It rejects the book value standard (depreciated original cost) in favor of a value approach more dependent on market forces and future revenue generation. Of the thirteen states where fair market value has been adopted, only California,[2] Illinois, and Ohio[3] provide clear definitions, which are ultimately overshadowed by FMV appraisals required by state statutes. Most states defer to appraisers to determine fair market value (NC, PA, FL, MD, TX, VA, MO), thereby circumventing a definition altogether. Iowa defines fair market value as the greater of the average of two FMV appraisals, the depreciated value of capital

[2] California defines fair market value as "the highest price that would be agreed to by a willing buyer and seller" as defined in the state's Code of Civil Procedure.
[3] Ohio and Illinois define fair market value as determining the amount for which the water or sewer utility would be sold in a voluntary transaction between a willing buyers and willing seller under no obligation to buy or sell.

assets, or the amount necessary to retire the system's outstanding revenue and general obligation bonds. New Jersey and Indiana do not include any reference to fair market value despite legalizing processes similar or identical to other states.

Despite being the most frequently used appraisal standard in other sectors, such as real estate, a concrete definition of fair market value for public water systems eludes expert appraisers. Scholars and economists dispute contradictory definitions ("most probable" or "highest" price) and the marketplace conditions required to produce a fair market value (must there be a deep and competitive market to determine a true fair market value?) (Sanders, 2018). This paper illustrates the challenges with analysis of two comparative case studies below which show the process of public procurement and value determination under the traditional book value and under the new FMV processes.

4.2 Case Studies: Calculating Book Value and Fair Market Value

Techniques for determining book value are well-established, but fair market value introduces complex new challenges into the valuation of municipal drinking water systems. Two recent acquisitions illustrate the differences between these two approaches. New Hartford, CT was recently sold and used the traditional book value approach for rate recovery. This approach is standard practice across the country and has been in place for the last 70 years. Oak Brook, IL was also recently sold, but its value was determined under Illinois's new FMV law. Fair market value uses three approaches – cost, market, and income – to determine value, and these values can differ widely. Using data from sales documents and regulatory records, the two cases are compared below.

4.2.1 New Hartford, CT

The book value ratemaking method is illustrated in the recent 2023 acquisition of the Town of New Hartford's water and sewer systems by Aquarion in Connecticut. New Hartford sold its systems to provide rate relief, which for wastewater rates were among the highest in the state, and to bring in Aquarion's expertise to upgrade its systems. Before this transaction, the town's water/wastewater system was managed by a seven-member volunteer committee that had no capital plan, no professional staff, and operated on a "fix it when it breaks" approach. Aquarion Water Company, a subsidiary of Eversource Energy, negotiated a sale price of $8 million with the Town and submitted a full capital improvement plan to the Connecticut Public Utilities Regulatory Authority.[4] The application they submitted included an excess of purchase price over book value (the acquisition premium) of approximately $2 million, none of which Aquarion was permitted to recover through rates.[5] This high premium would produce a revenue shortfall of $200,000 for the company in the first five years of operation.[6]

The ratemaking structure utilized for this transaction represents the prevailing approach across the country. Aquarion and the Town of New Hartford negotiated a sale price that reflects the net present value of the assets: a balance between the future profits the company will receive from ratepayers for the system book value, the benefits provided by operating in a predictable regulatory environment with a government-granted monopoly, and

[4] The public procurement process includes a request for proposals issued by the Town, followed by AWC-CT's response to the request for proposals, multiple in-personal and virtual information sessions, and a public referendum. All FMV states except New Jersey are silent on required procurement processes for systems being sold.
[5] The deal also provided Aquarion with ten years of nonpayment of taxes to help stabilize rates. Taxes are permitted to be recovered through rates by Connecticut's Public Utilities Regulatory Authority.
[6] The acquisition also includes plans for the town to contribute a non-rate-recoverable $3.6 million from the sale to expand the system.

the costs incurred *to the company* for the portion of the purchase price that exceeds the book value. Importantly, this demonstrates the widely held principle that the acquisition premium is excluded from recovery through rates. Regulators enjoy the discretion to interpret state statutes and are advised on precedents from case law, so these processes vary depending on the state regulatory environment, but this standard approach is significantly different from the new approach under FMV.

4.2.2 Oak Brook, IL

Oak Brook, IL sold part of its water distribution system to Aqua Illinois, a subsidiary of Essential Utilities, for $12.5 million in 2022 under Illinois's FMV law. This case illustrates how FMV is calculated. Appraisers under FMV use three approaches (cost, market, and income) to determine value. The cost approach considers a system's replacement or reproduction cost deducting for deterioration and/or obsolescence. The income capitalization approach attempts to predict the future income the system can earn. The market approach compares the characteristics of the appraised utility to other recently sold utilities as benchmarks for determining value. Historically, the market approach has not been used due to the difficulty in obtaining comparable sales data (Mastracchio et al., 2020). The lesser of the average of all three independent valuations (each of which considers the three above approaches) and the purchase price becomes the rate base according to Illinois state law.

Cost Approach

Illinois is one of several states where appraisals must include an engineer assessment of the tangible water system assets.[7] The engineer's assessment estimates the cost to reproduce the assets today considering their loss in value due to depreciation through physical deterioration. This value ("reproduction cost new less depreciation") theoretically establishes the reasonable upper limit for the system sale price: the rough cost to produce a duplicate system. (Exhibit 2.03: Appraisals, 2021). In the case of Oak Brook's system assets, the value determined through this approach was $5,599,966.. Two appraisers accepted this engineer's value as their cost approach value estimate, but the third increased the cost approach value by $500,000 due to the value of the easements for the water mains. Appraisers typically include land value estimates in their cost approach, but two appraisers decided that land easements should not be valued in this case as the water system is located entirely in public rights-of-way. Thus, two appraisals produced a cost approach estimate of $5.6 million and the third appraisal produced a cost approach estimate of $6.1 million.

Income Approach

The income approach usually does not appear in fair market value appraisals in Illinois, but Aqua Illinois (the acquirer) retained a consultant to estimate a value under this approach for the appraisers. The consultant estimated future revenues of the system (based on expected customer counts, fees, and rate increases) and calculated the expected rate of return on the assets using a standard financing model, the discounted cash flow method, whereby future cash flows are discounted to present value. All three appraisers accepted the consultant's estimate ($18,696,676) as their income approach valuation.

[7] North Carolina, Pennsylvania, Ohio, Texas, and Virginia also require engineer assessments. See Appendix Table 2 for more detail on each state.

Sales Comparison / Market Approach

The Market Approach is the only approach for which the appraisers were solely responsible, as the Income and Cost value estimates resulted from information provided by outside consultants. Each appraiser used either four or five recent sales to determine a range of prices buyers have been willing to pay for comparable systems in the past. The ideal comparable water system has the same system structure, is regulated by the same Commission, serves a similar number of people, and has assets in a similar state of repair. The small number of comparable sales identified by the appraisers reflects the dearth of market activity in municipal water system sales. The differences across the three appraisers illustrate the challenges of a market approach in a thin market.

One appraiser selected four systems that were most like the subject property. Although these comparable systems served smaller populations than the Oak Brook system, their water delivery systems, like the Oak Brook system, did not contain water treatment plants, wells, towers, or land. She concluded a fair value of $1,225 per customer for Oak Brook's property, and the system value to be $4,944,000.

The other two appraisers also identified four and five comparable sales for their analysis; but among the six systems analyzed, all included wells and storage tanks, and five included water treatment facilities. By contrast, Oak Brook sold a bare-bones distribution system containing only water mains, valves, and hydrants. Due to these errors, the latter two appraisals produced market values of $10,100,000 and $14,126,000, significantly higher than the first assessor's market approach valuation ($4,944,000).

Reconciliation and Final Price Determination

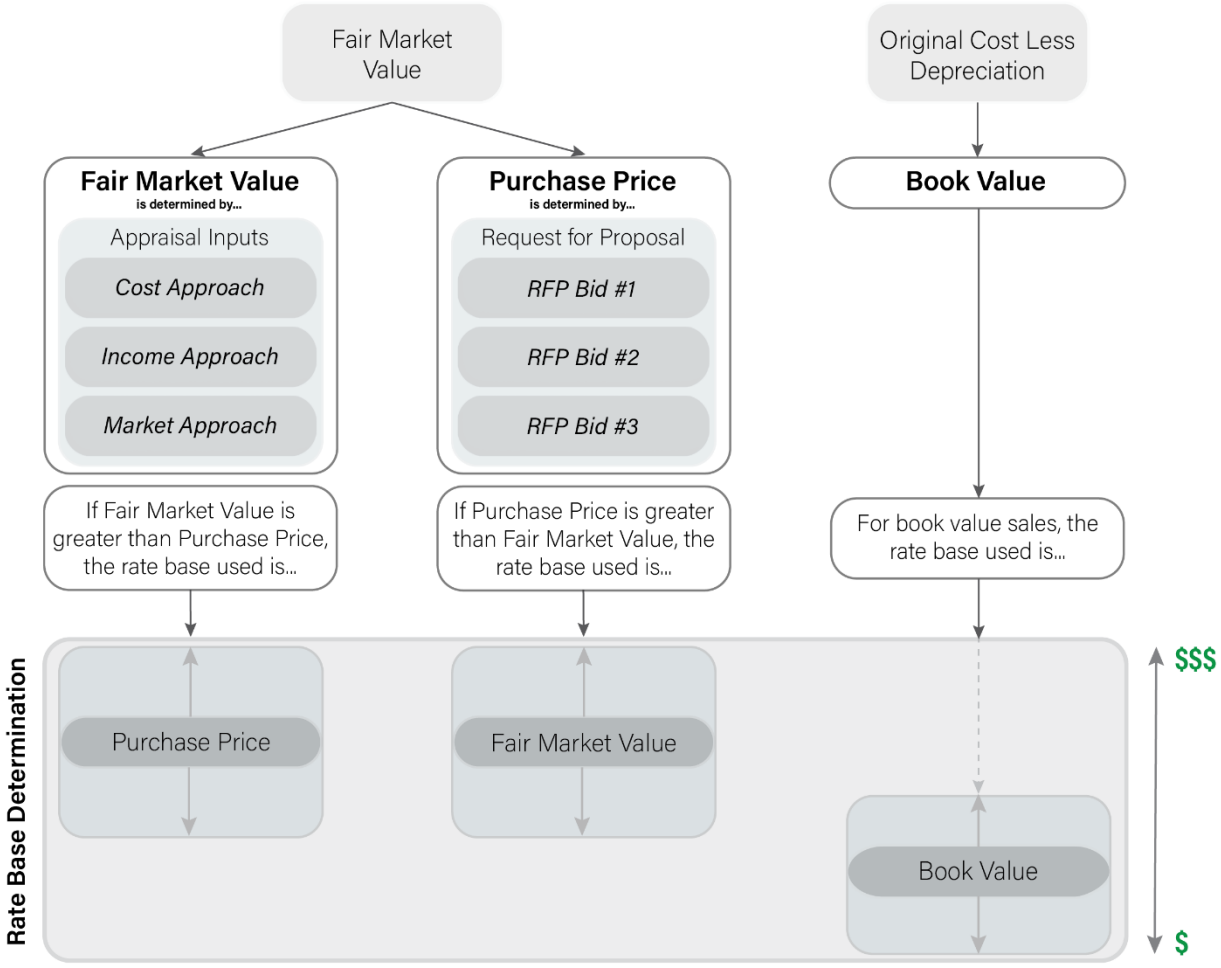
During the reconciliation process, the appraisers weigh each individual approach but do not have to provide reasoning or formulas to justify their calculations. While the reconciliation brought all three appraisals within the same range, the market approach varied widely, and the income approach (based on flows of ratepayer revenues) was two to three times higher than the cost approach, which tends to be closest to the book value. Additionally, one appraiser opted to drop the cost approach in their final reconciliation.

Ultimately, Aqua Illinois purchased the system for $12.5 million. As these appraisals were conducted in compliance with the state FMV statute and the fair market value appraisal (average of $13,077,000) exceeded the purchase price of $12.5 million, the purchase price was permitted to be included in the rate base, where it will be repaid over time with interest by utility customers.

4.2.3 What does the shift in valuation mean?

These two cases illustrate how the introduction of FMV shifts from cost-based ratemaking to ratemaking reliant on appraisals. Figure 2 compares the book value approach (used in New Hartford) with the Fair Market Value approach. In Oak Park the fair market value exceeded the purchase price, so the purchase price was permitted to be included in the rate base. If the purchase price had been higher, the fair market value would have been used. In nearly all cases, the purchase price or fair market value would exceed the traditional book value as both introduce the value of future revenues.

Figure 2: Comparison of Acquisition Cost Recovery Methods



Most state FMV laws defer to appraiser expertise and the Uniform Standards of Professional Appraisal Practice. These wide-ranging sources of intangible value would not appear under "book value" accounting, which only considers tangible assets. States that have recently adopted FMV outline different processes for selecting appraisers, the number of appraisers used and which appraisers qualify, but most enlist multiple appraisers to estimate value (See Appendix Table 2 for a comparison across all 13 states)

4.3 Drivers of FMV – The Big Players, Regulators, and Legislators

In order to determine what is driving the push for fair market value and the involved parties in shaping it, I analyzed FMV bills and relevant amendments, public testimony, court judgments, and public utility commission records on acquisition processes. I conducted extensive research in each of the 13 states. Sources utilized to support the analysis that follows can be found in Appendix Table 1.

My analysis finds the introduction of FMV is concentrated in states where investor-owned utilities already operate. American Water, the largest investor-owned water utility in the United States, operates in all but one of the states (Ohio) where FMV bills have passed. Similarly, all eight states, including Ohio, where Essential Utilities (the second largest investor-owned water utility) provides water service, have passed FMV bills. Large investor-owned utilities and the trade associations that represent water companies (NAWC) have publicly supported, advocated, or even drafted FMV laws alongside legislators. American Water has demonstrated that FMV is a legislative priority and a cornerstone to their growth goals during recent investor presentations (American Water Works Association, 2023). They have been able to realize their goal of passing FMV laws in 10 of the 13 states in which they operate.

Many state regulators interact with legislators regularly through the Committees that oversee energy policy and/or public utilities. In fact, most public utility commissions have a staff member that acts as a liaison between the legislature and the commission (Engagement Between Public Utility Commissions and State Legislatures, 2019). Comments from available recordings indicate that Maryland's Public Services Commission and Iowa's Utility Board were both involved in jointly drafting their FMV bills alongside investor-owned utilities and ultimately both testified in support of the bills as well. The same

participation occurred for a FMV bill in Tennessee that never reached a vote (see Appendix Table 1). However, not every FMV bill receives support from regulators. The Connecticut Public Utilities Regulatory Authority denounced a 2019 bill, stating that it would result in municipal water facilities being overpriced and negatively affect ratepayers, and the bill died in committee.

Investor-owned utilities express their support for FMV laws in testimony before state legislative committees. Aqua, the water/wastewater division of Essential Utilities, appeared before committees in Texas and Ohio to explain why FMV is necessary to improve state water infrastructure. American Water testified in Maryland, Iowa, New Jersey, and Tennessee. However, this evidence is limited, as not every state makes publicly available archived recordings of its committee meetings.

A key feature of FMV that its proponents extol is that the rate recovery incentive will lead to improvements in deteriorating water infrastructure. During testimony on Ohio's FMV bill, supporters highlighted the estimated $13 billion in investment (determined by the ASCE (2021)) needed to bring the water infrastructure into a state of good repair in the next two decades. In New Jersey, the ASCE's infrastructure grade was similarly emphasized, as well as the expertise investor-owned utilities bring to the state, which already serve half of all municipalities. Others testified that small and middle-sized communities are not capable of making improvements that meet minimum standards or increasingly strict water quality regulations and that the current system deprives municipalities of the full value of their assets (NC, MD, OH, TX). In addition to legislators and utilities voicing their support for these bills, support also came from business associations, construction companies, and some municipal leagues (NJ, OH).

Some of these assertions are borne out in FMV bills that have been justified by the argument that municipal system owners cannot afford to make repairs to systems that urgently need them. For example, a memorandum written by the sponsor of Pennsylvania's Act 12 FMV law describes the bill's intent to create opportunities specifically for distressed systems to sell to investor-owned utilities. McKeesport, Pennsylvania, the first system to utilize the state's FMV law ("Act 12") to sell its wastewater system to American Water, embodies the spirit of the memorandum. The city was able to balance its budget and avoid municipal bankruptcy due to the sale (Kline, 2021).

As FMV bills moved through state government, the most frequent groups in opposition were state ratepayer advocacy groups. These groups are state agencies that represent consumer interests before regulatory commissions. In four states for which archived commentary on FMV legislation exists (MD, NJ, NC, OH), such groups testified in opposition to the bills. In New Jersey, the Director of the Division of Rate Counsel urged, unsuccessfully, that development contributions and depreciated assets be excluded from the rate base during acquisitions because ratepayers had already funded these infrastructure improvements.

Ratepayer advocacy groups also play an ongoing role in monitoring the implementation of the laws. For example, Cal Advocates condemned the state's FMV Law, stating "… the Act spreads thin resources that were intended to support small, troubled water systems and results in the churning of systems between large companies." For instance, the Park/Apple Valley Rancheros system sold for $68 million in 2011 and was purchased again for $218 million in 2015. Cal Advocates goes further to note,

> While investor-owned utilities claim that the benefits of acquisitions include intangible benefits ratepayers experience through consolidation

> (reliability, access to low-income support programs, improved compliance), [we] contend that no consolidation to date produced a rate reduction for all affected ratepayers. (2022)

Other concerned parties include utility operators. Dennis Doll, the CEO of the investor-owned Middlesex Water Company, and Peggy Gallos, the executive director of the NJ Association of Environmental Authorities, argue that fair market value privileges the private sector at customers' expense (Gallos and Doll, 2021). Doll's private water company intervened in the first acquisition completed under NJ's FMV law in Egg Harbor, stating that they would be affected by the outcome of the proceeding as one of several entities that are contract customers of New Jersey American Water.[8]

Public water authorities also express doubts about their ability to compete with investor-owned utilities. Public authorities are not guaranteed the same return on investment and may not be able to recoup the investment over a larger customer base, even if their lower purchase price would result in lower rates for customers. Franconia Sewer Authority bid $23.5 million for the neighboring Towamencin Sewer System in Pennsylvania, reflective of a recent depreciated original cost study commissioned by the Town (Whitmayer, 2022). The bid that Towamencin Town Supervisors selected came from an out-of-state utility company to purchase the system for $115 million, five times greater than Franconia's bid.

Opposition from ratepayers stands in contrast to the popularity of FMV among local officials and politicians. Despite the local division caused by Towamencin's sewer system sale, Town Supervisors voted 4-1 to approve it. Residents later organized a home rule charter referendum designed to subvert the sale, which narrowly succeeded (Rizzo, 2023).

[8] Middlesex Water Company purchases water from New Jersey American Water Company, Inc.'s Elizabethtown System. New Jersey allows consolidated tariffs, meaning that the acquisition cost of Egg Harbor can be collected through increased rates for all American Water's customers, including Middlesex Water Company.

Public opposition has been isolated in most states except Pennsylvania, where an advocacy group, Neighbors Opposing Privatization Efforts, successfully forced Aqua America to abandon its plan to purchase Norristown's sewer system and has helped other communities organize against privatization (Maykuth, 2021).

Politicians in Pennsylvania are responding to the groundswell of opposition created by the state's FMV law, "Act 12." A representative whose own district is subject to a contentious privatization effort commented, "I have gotten more calls and emails from constituents who oppose Aqua's attempts to buy CWA than on any other local issue," despite having voted for the bill originally (G. Scott, 2023). In fact, a strong majority of state representatives supported Act 12 (175-22) and the bill passed unanimously in the State Senate in 2016. Likewise, in Missouri, only four legislators of nearly 200 across both chambers voted in opposition to the state's FMV bill in 2013. Both chambers in Iowa, Maryland, and Texas gave unanimous support to their respective FMV bills. Only once did an FMV bill nearly fail a roll call vote: in the New Jersey State Senate, the bill passed by a thin 21-16 margin in 2015 despite five Senators speaking in opposition.

The legislature sets the FMV framework through policy, but regulators provide further definition through their application. The Missouri Public Service Commission reluctantly adhered to the FMV statute even as its own staff recommended denying a controversial acquisition (Staff of the PSC Recommendation, 2021). They approved the sale of a water system despite the fair market value appraisal lacking any physical observation of the assets and reporting an unjustifiably high price per customer. The Commissioner provided a rigid interpretation of the statute, stating "… [the statute] lays out that the Commission shall use the appraisal if the appraisers are chosen in a certain way and are

disinterested parties. Now it doesn't address calling into question the accuracy of the appraisal…" Additionally, the Pennsylvania Public Utilities Commission approved the sale of a municipal sewer system over the objections of an administrative law judge (Caruso, 2023). The Judge determined there was insufficient evidence to establish that the benefits of that system's acquisition outweighed the adverse impacts on ratepayers.

The analysis above shows the contested nature of FMV legislation and implementation in the twelve states in our analysis. While private investors clearly support FMV; public utilities, public utility commissions and rate payer groups raise serious objections. Municipal leaders are incentivized to consider water system sales, as FMV inflates the price they can receive. The technical aspects of implementation of FMV raise questions about what is valued and who benefits.

4.4 Case Study: Eureka, Missouri

Eureka, Missouri, completed a sale of its municipally owned water and wastewater systems in 2022. The sale was enabled by §393.320 of Title XXV (Incorporation and Regulation of Certain Utilities and Carriers) of the Revised Statutes of Missouri, passed in 2010. The buyer, Missouri American Water Company (MAWC), purchased the system with plans to connect its new customer base to a new water supply source, leading to the wells supporting the existing system to be relegated to use as an emergency back-up supply. Additionally, the quality of the appraisal and the amounts permitted to be recovered under the State's Fair Market Value law spurred debate that exposed both the key differences in perceived public and private value of water infrastructure and potential pitfalls of FMV determination processes. These differences and attempts to reconcile them before the

Missouri Public Services Commission are recorded in MAWC's application to be approved in its purchase of Eureka, Missouri's water and sewer systems. The documents evaluated include Eureka's system appraisals, engineering reports, hearings, orders, and testimony from appraisers, engineers, advocates, and Missouri-American Water Company.

4.4.1 Intended Use

The first debate raised during this acquisition is one of intended use. Staff at the Missouri Public Service Commission ("Staff") argued that the appraised value of the system and negotiated purchase price must consider the intended use of the assets (i.e., wells to be used as back-up only). The appraisal includes a valuation of these assets, but the Staff believes that this must be reduced in light of the fact that they will not be used and, therefore, should not be paid for by ratepayers (*Rebuttal Testimony of Curt B. Gateley*, 2021). However, an appraiser refuted these claims and stated that it violates the Uniform Standards of Professional Appraisal Practice (USPAP) to assess property in any condition other than it currently exists. He uses the analogy of purchasing a used car to demonstrate why future uses must not be considered: "If the vehicle has a certain value, but the buyer intends on using the vehicle for parts and scrapping the vehicle, should the seller accept less money?" (*Surrebuttal Testimony of Joseph E. Batis*, 2021).

Appraisals implicitly assume that assets will be used in the future when predicting the profits that will be generated from that use under the income approach. In a different acquisition testimony in Missouri, the same appraiser who challenged the Staff's previous attempts to consider anticipated use, stated,

> The Market Value of a non-profit municipal water system is much lower than a private system with profit income potential…The intended use is as a

> private system, and the property should be appraised consistent with the anticipated use. In order to appraise the property as a private system, investment (increased income) must be considered (Valuation Report, 2017).

The consideration of intended use, as described, is innate to privately-owned asset valuations. Appraisers concede this; it is not an invitation to claims of misconduct against them. Rather, it is an indictment against the USPAP's rigidity in adapting to the unique requirements of utility regulation and, specifically, intended use.

As previously mentioned, regulated utilities are eligible only to receive returns on invested capital that is "used and useful" to the business. In many states, Fair Market Value requires appraisals to adhere to the USPAP. In this case, the appraised fair market value does not consider whether assets acquired (and subject to cost recovery through rates!) will actually be put into use. Therefore, the adoption of Fair Market Value laws results in the de facto erosion of the "used and useful" standard. This regulatory loophole means that Eureka residents will pay for infrastructure from two water sources: a future connection to American Water's St. Louis County system and the abandoned (or "back-up") former system included in the fair market valuation conducted under USPAP.

4.4.2 Contributed Assets

Another concern emerging from Eureka surrounds its conflict with the historic treatment of contributed capital. Some new developments, such as the Arbors at Rockwood in Eureka, pay for the construction of essential infrastructure through community fees imposed on residents. After construction is completed, they turn the assets over to the infrastructure provider to operate and maintain. Regulators prohibit these investments from being used as a source of profit by the recipient, who contributed nothing to their

construction. In book value accounting, this would show up as a fully depreciated asset from which a regulated utility could earn no profit (unless it undertook further improvements). Government-owned utilities such as Eureka can also accept this infrastructure, as it did from the Arbors at Rockwood.

FMV allows depreciated assets to be increased to a higher value that is subsequently charged to customers, but how should this apply to assets contributed to the City systems? Unlike assets installed by the City of Eureka and covered through rates, contributed assets are paid only by residents who directly benefit from them. Residents of the Arbors pay annual special assessments to a Community Improvement District that includes the cost of developing the water system serving their neighborhood. Should the City of Eureka be compensated for property it received at no cost and used no capital to create?

Ultimately, these costs were included in the purchase price and rate base contrary to regulatory precedents. While it is true that customers of systems purchased under a FMV law may have to pay, for a second time, for assets already depreciated through their rates, it is typically the selling utility that undertook the risk and deployed the capital to construct these assets. In this example, the Arbors' residents' special assessment fee reflects risk and capital tied to the community's developer, not the City of Eureka. Akin to the "used and useful" standard established by the Supreme Court, the historic and precedent-informed regulation of contributed assets is eliminated under the FMV statute.

Additionally, the unique treatment of contributed assets in acquisitions under Fair Market Value is displayed in Eureka. Under book value ratemaking, acquiring utilities mark down the value of contributed assets at purchase because this portion of the purchase price is non-recoverable and reduce their return on investment (Mastracchio et al., 2020). However,

FMV acquisitions do not suffer the same penalty and are instead incentivized to include the value of these assets in the purchase price and recoup this value through higher rates.

4.4.3 Appraisal Quality

The appraisal of Eureka's infrastructure faced scrutiny regarding both its content and the procedures under which the appraisers were selected.

4.4.3.1 Appraiser Selection

While Missouri law requires that the three appraisers selected be disinterested parties, MAWC played an outsized role in selecting which appraisers would be hired. Both the buying and selling utility are required to select their own appraiser who jointly select a third to conduct the appraisal with them. However, MAWC sent Eureka officials their own list of pre-qualified appraisers that had previously worked with the company and stated that they would handle the appraisal costs and secure the contracts for the appraisal service (WA-2021-0376 Report and Order, 2022).

The appraiser candidate pool recommended by Missouri American is internal to the company. Appraisers on this list who would like to be hired on an ongoing basis benefit from their positive working relationships with MAWC. It is possible that the "disinterested" appraisers on the list maintain their favorability with the company by potentially violating that condition. The appraisers provided MAWC the opportunity to review a draft of their Initial Appraisal Report before providing a final version to the City of Eureka (WA-2021-0376 Report and Order, 2022). Additionally, one appraiser's communications with MAWC demonstrated an intentional attempt to hide information from Eureka officials about

revisions that would affect the outcome of the appraisal. While communication is necessary between appraisers and their clients to receive payment, send documents, provide updates, and coordinate schedules, MAWC's involvement with appraisers and the selection process compromise the status of those appraisers as "disinterested."

4.4.3.2 Cost Approach

In what amounted to an accusation directed at both the integrity of the appraisal process and the appraisers themselves, the Missouri Public Service Commission (MO PSC) ultimately approved Eureka's sale after some harsh criticisms of the fair market value process. The Commissioners identified several issues related to the credibility and integrity of the engineering report and the appraisal that utilized it. Nonetheless, four of five commissioners were persuaded by the prescriptive language of the state's FMV law and the residents' referendum approval of the sale that they felt they could not justifiably deny American Water the Certificate of Convenience and Necessity (the franchise) to operate in Eureka.

Missouri American Water Company (MAWC) intervened in the appraisal process to inflate the valuation under the cost approach of the appraisal. Ironically, the cost approach assesses the value of the tangible property of the system less depreciation, so MAWC's intervention boosted the appraised value of assets the company never intended to use. After the engineering firm ("Flinn Engineering") hired by Missouri American's appraiser released their Engineering Report determining the condition and value of the system, they re-examined the report's inputs before releasing a second report (that made no mention of the first). The first Engineering Report released valued Eureka's water system at $10.6 million

and sewer system at $5.5 million. The following report increased the valuations of these systems to $18.2 million and $13.3 million, respectively. What occurred in the interim exposes the vulnerability of the appraisal process to the influence of outside actors.

Following the release of the initial Engineering Report, Flinn Engineering was contacted by an engineer from MAWC with information that influenced their future revisions. MAWC provided parcel-level construction date data that indicated the system was newer, and thus more expensive, than previously estimated. They sought to see how this information would impact the Engineering Report's cost valuation. In this correspondence, the owner of Flinn Engineering sent MAWC's engineer the spreadsheet she used to estimate the value in her initial report, suggesting that he could test different percentages in it. During evidentiary testimony, Flinn Engineering's owner suggests that several conversations took place either virtually and over phone and that she met in person with MAWC employees to test assumptions.

At the same time, the Staff argued that the Engineering Report overestimated the value of the system by ignoring system compliance issues that might have reduced the cost approach estimate. MAWC's correspondence with Flinn Engineering did not address these issues, however, and only provided information that would, and did, lead to an increase in the systems' appraised fair market values.

Concerns about the integrity of the engineering report that guided the cost approach of the appraisal pervaded in testimony before the Public Service Commission's Regulatory Law Judge. The engineer responsible for the report stated that she typically did not use maintenance data or environmental compliance data when conducting her "high-level" report on the asset condition and estimated value. Alarmingly, she also uses two

classifications to describe the condition of systems she evaluates, one a letter grade system and another a quality scale ("Excellent," "Very Good," "Good," etc.), neither of which has a corresponding rubric. Instead, she relies on her own experience in the industry to make those determinations. Additionally, she never visited the systems' facilities to complete a site inspection before attesting to the quality of the system.

This engineer is also intimately connected to American Water Company. She contracts with Illinois American Water Company, is a former employee of Missouri American Water Company, and has stated that she started her business with confidence "that the services we could provide would be a good fit for Illinois American Water" (*Flinn Engineering, LLC*; *WA-2021-0376 Evidentiary Hearing*, 2022). This contradicts the fair market value law's requirement that the appraisal be conducted by disinterested persons, as the engineering firm that played a large role in influencing the appraisal has a close business relationship with the company and stands to benefit from complying with its requests.

4.4.3.3 Market Approach

Upon completing the report, the final appraisal did not justify why Eureka's systems were more expensive on a per-customer basis than other acquisitions to which they were compared. As part of the sales comparison approach, the appraisers collected data on recent sales of other water and sewer systems to determine an appropriate value per customer of Eureka's system. These values ranged from $2,700 to $4,157 per customer, but Eureka's systems received a value of $4,500 per customer (*Staff's Initial Post-Hearing Brief*, 2022). When questioned on this, the appraiser appointed by MAWC explained that the figure was

based on the appraisers' "experience and judgment." (WA-2021-0376 Report and Order, 2022)

Appraisers *should* be adjusting the sales price of other systems to account for variables such as revenues, number of customers, operating income, operating cash flows, and net utility plant (Levin, 2015), which did not occur in this appraisal (and might be difficult data to obtain). These adjustments are critical to develop an accurate market approach as systems are of varying infrastructure types, configurations, and states of repair. Additionally, there are far fewer comparable sales occurring in the marketplace for these systems than, say, cars, which are frequently traded and can therefore develop a more standardized value benchmark (Kelly Blue Book).

4.4.3.4 Water System Appraisal Issues

Eureka's wide-ranging estimates of the replacement cost (less depreciation) in the Engineering Report attest to why the cost approach might be ill-suited to this industry. The relationship between the condition of a system's assets and a community's age is far inferior to an in-person examination of those assets. Luckily, large, expensive facilities can be assessed in-person, but both sewer and water distribution systems lie below ground. Therefore, the state of the condition cannot be determined without rigorous analyses that engineers frequently lack the knowledge or data to conduct. The limited data available means that estimates are subject to wide fluctuations and place heavy emphasis on other variables (such as age) assumed to be accurate and correctly correlated to the condition of the system. These limitations call into question the reliability of fair market value appraisals.

To confuse matters yet further, the income approach is frequently not utilized in appraisals. The appraisers conducting Eureka's appraisal call it "industry-accepted framework" to omit the Income Approach. They cite a lack of information on historic revenues, operating expenses, and capitalization rates as barriers to completing an Income Approach estimate. Additionally, they find that many municipal systems combine management and budget for water and sewer systems, which creates difficulties in separating these revenues and costs. In fact, the only approach that is truly a staple of a water/sewer FMV appraisal is the cost approach, as the market approach is occasionally skipped by appraisers who point to the small market for comparable sales of these systems.

In public testimony during the Eureka acquisition, an appraiser was asked the question, "Could there be multiple valuation opinions for a particular property that result in differing opinions that are all reliable and credible as measured by USPAP standards?" His response: "Yes. Real estate appraising is an art, not a science." What I might suggest is that water and sewer utility appraisals strive to be more scientific. The jury is still out on best appraisal practices in this industry yet is simultaneously advancing different approaches and providing incomplete appraisals. The loose-ended requirements of USPAP should not be shaping regulatory returns during FMV acquisitions. In the case of Eureka, these requirements give a long leash to appraisers without seeing a commensurate level of rigor in their outputs. This is especially alarming as this leniency can impose higher cost burdens upon ratepayers.

4.4.4 How does FMV encourage this behavior?

Regulatory returns and incentives influence the behavior of utilities. In utility regulation, rate recovery of operating costs and invested capital is a built-in motivator for utilities to invest in their systems. However, some incentives (such as the throughput incentive for electric utilities) encourage undesirable behavior. For water and wastewater utilities, the mechanism designed to dissuade undesirable sale price maximization was the limit on regulatory return for system acquisitions set at net book value of the acquired system. In its absence, MAWC demonstrated impudence towards price control by actively seeking out purchase price increases (and thus rate base increases) through close relationships with valuation experts. They showed similar disinterest in the accuracy of the appraisal by relying on an engineering report that was far too subjective to be useful (and was created by a former employee). In providing non-prescriptive options, the USPAP essentially renders appraisals in-auditable; appraisers must be taken at their word that they gave their best effort despite the many limitations they face for this asset class. This behavior will be reflected in higher rates to customers across Missouri and windfalls for local governments.

4.4.5 Regulatory Capture

FERC Administrative Law Judge Scott Hempling describes regulatory capture as a shift in the attitude of regulators from "How do I advance the public interest?" to "What are the parties seeking?" (Hempling, 2014). Regulatory commissions, he says, are different than judges in that they should always try to defend the public interest. Regulation is the barrier that prevents firms from achieving a monopoly. Comparatively, public systems do not devote privately-held infrastructure to public purposes, and therefore have no claim to a just

and reasonable return. As they do not operate as a profit-seeking business, there is comparatively little concern about public water service providers fleecing customers.

In approving the sale of Eureka's water and sewer systems, the Public Service Commission made abundantly clear that they were more concerned in balancing interests than in advancing the public interest. Considering the many questionable relationships, adjustments, and plans in purchasing the Eureka water and sewer system, there was no shortage of justification to deny MAWC's application for purchase. Nonetheless, the overwhelming attitude towards granting this approval by the four of five Commissioners who voted yes was that their hands were tied by the statute.

The Chairman of the PSC summarized this argument, stating, "It [the appraisal] would either have to not follow the USPAP or they would have to not be disinterested parties and neither of those arguments were advanced, so I don't believe we can impeach the appraisal as suspect as I may feel that it personally is." (*Agenda on 5/25/2022*, 2022). These arguments reflect the exact requirements specified in the FMV law. However, Missouri's FMV law does not abrogate the Commission's obligation to find the acquisition in the public interest before approving it (*In the Matter of Tartan Energy Company*, 1994; *Staff's Initial Post-Hearing Brief*, 2022). Case law in the state of Missouri holds that statutes should be harmonized where possible, not invalidate each other (*State ex rel. Coffman v. PUBLIC SERV. COM'N*, 2003). Therefore, the final risk that exists under FMV laws as identified through this case study is that regulators shirk their duty to uphold the public interest. Despite concerns over precedent, the Commission approved this sale, relying on a public referendum as sufficient evidence of the sale being in the public interest.

4.4.6 The Public Interest / Consolidated Tariffs

In defending their decision to support MAWC's acquisition of Eureka's systems, several Commissioners relied upon the defective argument that the City's referendum to approve the sale satisfied the public benefit requirement. The results of a referendum supported by both government officials and a potential buyer and where any opposition has little time to mobilize is hardly a proxy for the "public interest." Additionally, under the regulatory structure of Missouri, the public that the PSC defends includes the thousands of customers not in Eureka, not benefiting from the windfall sum it will receive, yet experiencing increased rates due to the consolidated tariff structure in the state.

For existing MAWC customers in the St. Louis County tariff district, the purchase of Eureka's water system will result in an initial increase in rates of 1.5% (before capital improvements are made) (*Direct Testimony of Brian Lagrand*, 2021). For existing MAWC customers in the "Other Missouri Wastewater" tariff district, the initial increase in rates due to Eureka's purchase is 29.5%. Although there are fewer customers in this group, that is a large immediate impact and, if no major investments are made in their local systems, represents a one-way subsidy into Eureka's infrastructure. These customers do not get to vote in the referendum yet are still impacted by the Commission's decision, so to defer to the referendum outcome as an indication of public interest is a reductive position.

4.4.7 Eureka: Conclusion

Eureka's acquisition warns that appraisals are indifferent to assets' future uses and original investment, that some regulated utilities might purposefully inflate an acquisition price, and that regulators do not feel empowered to address either of these concerns.

Additionally, appraisals for utilities are subject to the discretion of valuation experts who face severe limitations in transferring those appraisal principles to water and sewer systems. If these appraisals could be self-enforcing through prescriptive standards, then regulators might be able to hold them to a higher level of scrutiny. However, the broad USPAP and statutory support for FMV result in a convenient unilateral disarmament of regulators. This leaves the captive ratepayers the regulatory system was designed to protect unguarded in the face of FMV.

DISCUSSION

What is Fair Market Value and Who Benefits?

The unique economic characteristics and regulatory structure of water complicate any definitive answer to the question: *"What is value?"* Scholars, customers, system owners, and the courts have all participated in this discourse. This thesis shows how FMV injects a dose of "exchange value" into these utility systems. As consumers and owners diverge in their opinions of the value of water systems, regulators play a key role as mediators in the application of fair market value.

Fair market value introduces a new technical definition of value that inserts "exchange value" into the appraisal process. While this exchange value is higher than the traditional book value, it does not include the broader "use value" of public water systems, which enable a city to grow and provide critical public health and welfare benefits. We must keep these broader values in our sights. Molotch (1976) explored the "use" versus "exchange" value tension in urban politics in his discussion of the urban growth machine. The promise of the growth machine is that it may incentivize private investors (through exchange value) to steward water resources and infrastructure with increased investment in system upgrades. The concern is that exchange value will trump use value, leading to higher customer rates and less affordability.

Currently, data to analyze the impacts of FMV is still limited, but opponents assert that initial rate increases that result from the transfer in ownership is unrelated to system improvements. Under FMV, neither buyer nor seller has an incentive to reduce the price below the appraised fair market value, as the local government receives a higher price than book value for its system, and the private investor can recoup that higher price through

increased rates. Tisdale (2022) calculates the average cost per connection for FMV deals in 2022 was about twice as much as non-FMV deals. In Indiana, the average cost per connection in the state increased from $2,500 to $6,000 after the introduction of FMV (Indiana Utility Regulatory Commission Annual Report, 2023).[9] Later investments made by the new owner will also be recoverable through increased rates.

Although lawmakers and FMV supporters concede that rates will rise, they argue FMV legislation creates an opportunity to invest in deteriorating infrastructure. Regulated utilities earn a return on their capital investments and thus may be more motivated to invest in their systems than government-owned water operators. System managers of government-owned water infrastructure often defer upgrades for their aging systems due to political concerns over raising rates (Young, 2023). Preventive maintenance that would substantially reduce long-run costs does not carry the same short-term political cachet as other local government investments, and the increased costs will be passed on to residents through higher rates. Therefore, a future paper might study the efficacy of FMV as a targeted incentive given the current widespread need for infrastructure investment (which is ultimately the source of profit for utilities). A helpful outcome from this study would be a determination of whether FMV is truly necessary and recommendations on other, less costly changes that can spur private investment.

Could ratepayers also win from FMV? While there is a clear example of ratepayers benefiting from improved quality and reliability, there is another opportunity for low-income customers to benefit from subsidization across systems. In states where investor-owned utilities possess multiple systems like Missouri, they are often permitted to

[9] These analyses do not control for the potential differences in system characteristics of those purchased using FMV and those purchased without.

"consolidate" tariffs (i.e., multiple systems are joined into a group with a common rate base and the same rates charged to customers). Systems acquired by a single company and included in the same tariff group can "smooth" cost burdens of investments over a larger customer base, which has potential to benefit currently underinvested systems (Scott et al., 2018). However, this can distort behavior and lead to economically inefficient investments.

While it is unsustainable for investor-owned utilities to acquire only poorly performing systems, there might be a greater incentive to acquire these systems in states that permit consolidated tariffs. Additionally, private and public utilities alike are hopeful that the low-income household water assistance program (LIHWAP) originated under the American Rescue Plan Act of 2021 (Connors, 2023) will limit the risk of purchasing an underinvested system in a low-income community as residents would receive support from the government in paying their water bills. Recent research finds that firms seek to acquire contracts in areas that can pay rate increases but not wealthy enough to mobilize significant opposition (Greiner, 2016). Future research might investigate the characteristics of systems acquired by regulated utilities to identify if FMV facilitates the purchase of a particular system typology.

Are the concerns raised nearly a century ago during an earlier period of fair market valuation of utility systems (SW Tel. Co. V. Pub. Serv. Comm., 1923) still relevant a century later? This analysis has shown that they are, as both Justice Brandeis's concerns of revenue-driven valuations and a thinly traded utility market manifest in modern appraisal practice. These standards require further scrutiny to improve the appraisals conducted under FMV. All of these require review as states consider FMV regulation. Future research should

explore these questions and look for examples from other countries, which may have experience with FMV.

CONCLUSION

A major shift in how to value US municipal water systems is occurring, as 13 states have now passed Fair Market Value legislation. This paper explored how fair market value is calculated and provides a comparative case study of FMV with the traditional book value approach. I analyzed public records (legislative testimony, regulatory documents and media accounts) to clarify which actors and incentives are driving this shift. I conclude with questions of what FMV means for our broader understanding of the public value of municipal drinking water systems. The FMV approach is attractive to both municipal sellers, because they receive more for their system, and private investors who will recoup their investment through increased rates. While such financialization of public assets is recommended by some scholars (Detter and Fölster, 2017), others warn of the negative economic and social effects of financializing infrastructure (Ashton et al., 2021). Indeed, regulators and ratepayers have raised concerns about how to measure fair market value and its impact on customer rates.

This thesis explores the technical challenges in the appraisal process created by the shift toward fair market value. Future research should explore the impacts of FMV on system prices, investment and rates. This research provides a foundation for understanding what these shifts in valuation mean for public utilities.

These issues are of critical importance to planners, who are concerned about investment, equity and affordability in water/wastewater infrastructure. Affordability, especially in cities with older systems, is an increasing concern (Swain et al., 2023; Pierce et al., 2021). While earlier research found no price difference between public and private systems, more recent research has found higher prices with privately run systems (Onda and

Tawari, 2021; Zhang et al. 2022). Planners need to be more aware of the financial aspects of infrastructure valuation in order to ensure that public values are protected. It is certainly the case that more investment in water and wastewater systems is needed (ASCE 2021). But that investment should be used to improve system quality (to meet rising environmental regulatory requirements), not just to inflate prices to benefit municipal sellers and private buyers by passing along higher costs to ratepayers.

APPENDICES

Appendix Table 1: Legislative and Regulator Documents Used in Analysis

State	Document Name	Year
California		
	FMV Bill	1997
	Public Advocate Comments on Workshop I (Rulemaking 22-04-003)	2022
Connecticut		
	FMV Bill	2019
	Energy and Technology Committee Joint Favorable Report	2019
	Assembly Energy and Technology Committee Public Hearing Transcript (Feb. 19)	2019
	Proposed Final Decision (New Hartford Acquisition)	2022
	Docket 22-09-18 (New Hartford Acquisition)	2022
	Joint Brief of the Town of New Hartford and Aquarion Water Company of Connecticut	2023
Florida		
	FMV Bill	2023
Illinois		
	FMV Bill	2013
	Legislation Webpage	
	Commerce Commission Docket Sheet (Oak Brook)	2021
	Exhibit 2.03: Appraisals (Oak Brook)	2021
Indiana		
	FMV Bill #1	2015
	FMV Bill #2	2016
	Archived House Video (Feb. 23 part 2, beginning at 54:00)	2016
Iowa		
	FMV Bill	2018
	House Archived Video	2018
	Senate Archived Video	2018
Maryland		
	FMV Bill	2018
	Senate Archived Video (Mar. 21)	2018
	Senate Finance Committee Archived Video	2018
Missouri		
	FMV Bill	2013
	Staff of the PSC Recommendation	2021
	PSC Meeting (May 25)	2022
	Eureka: Agenda on 5/25/2022	2022
	Eureka: Direct Testimony of Brian Lagrand	2021
	Eureka: Evidentiary Hearing	2022
	Eureka: Flinn Engineering	N/A
	Eureka: Rebuttal Testimony of Curt Gateley	2021
	Eureka: Report and Order	2022
	Eureka: Staff's Initial Post-Hearing Brief	2022
	Eureka: Surrebuttal Testimony of Joseph Batis	2021
	Eureka: Valuation Report	2017

New Jersey		
	FMV Bill	2014
	Assembly State and Local Government Committee Archived Audio Recording	2014
	Voting Record	2014
	Assembly Session Archived Video (begins at 1:07)	2014
	Senate Session Archived Video (begins at 1:00)	2014
North Carolina		
	FMV Bill	2018
	House Archived Audio (Apr. 26, begins at 3:01:30)	2017
	Legislation Webpage	2017
Ohio		
	FMV Bill	2019
	Legislation Webpage	2019
	Public Testimony	2019
Pennsylvania		
	FMV Bill	2016
	Voting Record	2016
	McCloskey v. PA PUC	2018
	A-2021-3026132 Recommended Decision (East Whiteland)	2022
Tennessee		
	FMV Bill	2019
	House Commerce Committee Archived Video (Mar. 26, begins at 1:01)	2019
	Senate Commerce and Labor Committee Archived Video (Apr. 9)	2019
Texas		
	FMV Bill	2019
	Legislation Webpage	2019
	House Committee on State Affairs Archived Video (Apr. 1, begins at 7:39)	2019
	Senate Committee on Water & Rural Affairs Archived Video (May 16, Part I)	2019
Virginia		
	FMV Bill	2020

Source: Documents collected by Author

Appendix Table 2: A Comparison of State Fair Market Value Policies

State	Year	Appraisal Required?	# Appraisers	Appraiser Selection	What is the rate base?
MO	2010	Yes	3	The acquiring utility and acquired utility each select one appraiser who jointly select the third.	The lesser of the purchase price and fair market value is added to the rate base.
IL	2013	Yes	3	Selected by either the acquiring or the acquired utility.	
PA	2016	Yes	2	The acquiring utility and acquired utility each select one appraiser.	
IA	2018	Yes	2	The acquired utility and the IA Utilities Board each select one appraiser.	
MD	2018	Yes	2	The acquiring utility and acquired utility each select one appraiser.	
NC	2018	Yes	3	The Commission, acquiring utility, and acquired utility each select one appraiser.	
OH	2019	Yes	3	The acquired and the acquiring utility together select three appraisers from a list maintained by the state.	
TX	2019	Yes	3	The utility commission selects the utility valuation experts.	
VA	2020	Yes	3	The commission, acquiring utility, and acquired utility each select one appraiser.	
FL	2023	Yes	3	The acquiring utility selects the appraisers from a list maintained by the commission.	
CA	1997	No	N/A	N/A	If the fair market value (sale price, by California's definition) exceeds reproduction cost, the commission may include the difference in the rate base.
NJ	2015	Yes	N/A	Either or both the acquiring and the acquired utility select the appraisers.	The value determined by the buyer and seller is included in the rate base if the system meets a predefined "emergent condition." Appraisals should support the final purchase price.
IN	2016	Yes	3	The municipal legislative body or municipal executive select the appraisers.	The full purchase price is added to the rate base if it is less than the appraised fair market value.

Source: Author analysis of Public Utility Codes

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