Government Finance Research Center

RESEARCH PRIMER: WATER RATE SETTING IN ILLINOIS

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INTRODUCTION

Ensuring the provision of safe drinking water and disposal of wastewater is a fundamental public service and key function of local governments. Despite their importance in sustaining life and maintaining public health, public water systems are often taken for granted and poorly understood. The complex infrastructure that delivers potable water and takes away sewage conveniently from our homes and places of work is hidden from the public eye, contributing to a general lack of awareness.[1] Historically, it is not until the system breaks down that water utilities grasp the attention of the public.

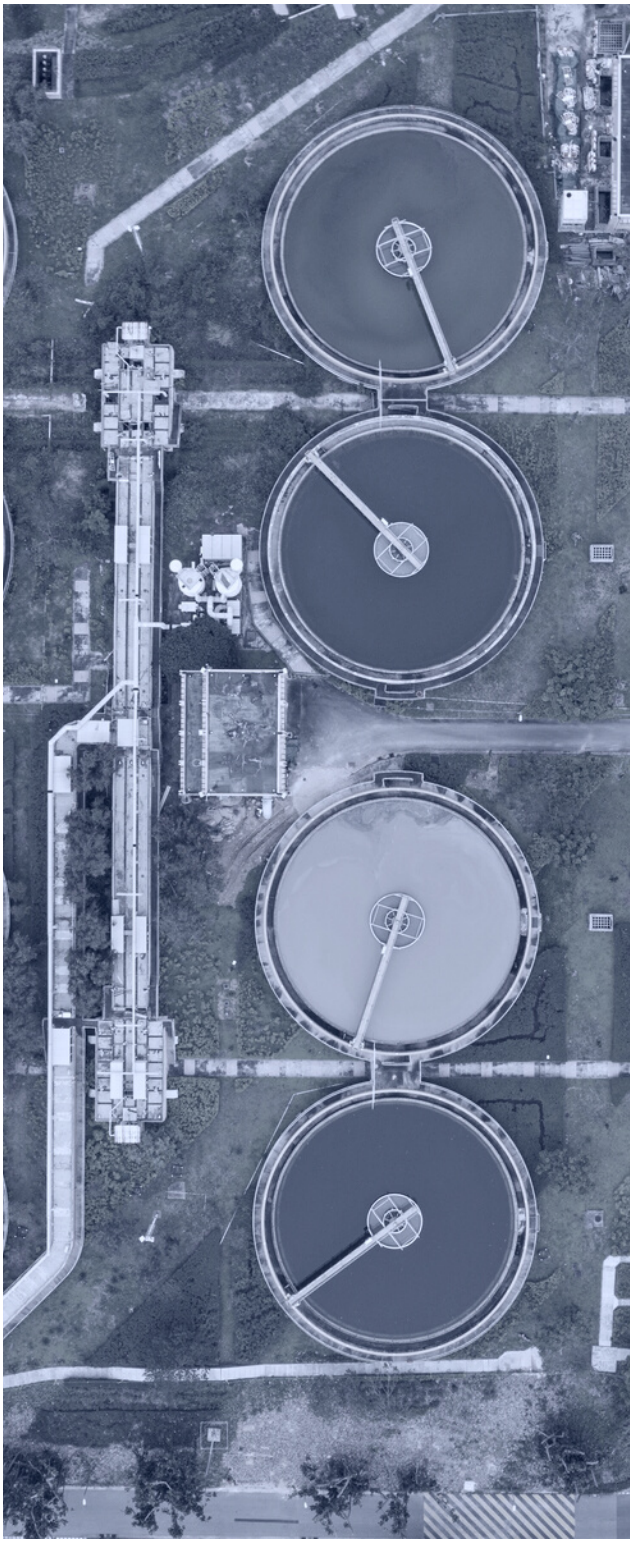
However, events in the last decade have pushed public water systems into the spotlight. The water crisis in Flint, Michigan has heightened public awareness around water system management failures and the harms of contaminants such as lead. Extended drought in the western United States has resulted in government-mandated rationing and raised the importance of water conservation and managing natural resources. Political discourse around the Infrastructure Investment and Jobs Act emphasized the outdatedness of water infrastructure across the United States. National studies[2] and regional exposes have highlighted racial disparities in access to clean and affordable drinking water.[3, 4]

1 Chicago Metropolitan Agency for Planning (2012). Full-Cost Water Pricing Guidebook for Sustainable Community Water Systems.

2 NAACP Legal Defense & Educational Fund, Inc. (2019). Water/Color: A Study of Race and the Water Affordability Crisis in America's Cities.

3 Cecilia Reyes (2017, October 25). Tribune Investigation: The Water Drain. The Chicago Tribune.

4 María Inés Zamudio (2021, November 8). Drowning in Debt. WBEZ Chicago.



Embedded in these recent discussions are inherent tensions between adequately managing complex infrastructure, protecting our natural resources, and ensuring equitable access and cost distribution of maintaining public water systems. At the intersection of this tension is the key function of establishing rate structures and billing users of the system. The process of rate setting and billing involves determining the fixed and and variable costs of the system, forecasting the cost of long-term maintenance, and deciding how these costs will be distributed across the customer base of the system.

There are more than 1,200 communities in Illinois that are responsible for the provision of drinking water and wastewater.[5] Although the goal of all these communities is to provide a generally universal product—clean and safe water—there are subtle differences in how communities go about doing so. These differences result in individuals, families, and businesses across the state being subject to a range of what they pay for water, even if they are neighbors. This primer provides a basic introduction to how users of public water systems are billed, how water bills are structured and calculated, and who is responsible for making the decisions that affect what users in Illinois pay for water services.

[5] Illinois State Water Survey (2012) The Distribution of Water Use in Illinois.

BASIC FUNCTIONS OF A WATER BILL

The primary function of a water bill is to collect the shared cost of maintaining and operating a water system for each of its users. The bills received by consumers of public water systems can be broken down into component parts, with the largest portion of a bill comprised of user charges that are based on the amount of water consumed during a billing period. As the primary source of revenue for water systems, user charges (also referred to as water rates) are a critical component to the financial management of the overall system.[6]

Water rates are a function of the amount of water consumed by the user (e.g., household, business, institution, etc.) and the per unit rate established by the governing body overseeing the water system. Usage is most frequently determined using meters, which are installed at a user's property and measure the volume of water entering and leaving a premise. Metered usage means a user's bill is based on the amount of water actually consumed, while unmetered usage means a user's bill is based on an estimated volume (usually an average) or a flat rate. It is important to note that a user billed through unmetered usage may be subject to a bill that is either excessive or insufficient relative to their actual usage.

Once the volume of water consumed by a user has been determined, it is multiplied by the rate for each service (drinking water or wastewater) to determine the user charges portion of a bill. Some water providers require a minimum bill rate that acts as a billing threshold. If an individual's usage does not reach the threshold, the user pays the minimum bill rate. If usage exceeds the minimum bill rate, the user pays the calculated amount based on the volume of water consumed.

[6] Chicago Metropolitan Agency for Planning (2012) Full-Cost Water Pricing Guidebook for Sustainable Community Water Systems.

In addition to charges directly related to the amount of water consumed, bills may also include additional fees or taxes. For example, some water providers may elect to charge a base fee that is calculated on the minimum cost to maintain the water system if no water is consumed. This base charge is similar to a minimum bill rate but appears differently on a customer's bill. Other items on a bill may include regulatory fees, administrative fees, tariffs, or conservation fees.[7]

The frequency of billing also varies between communities (i.e., monthly, bi-monthly, or quarterly basis). The billing cycle may be determined by the user with some providers offering the choice of billing cycle. In a 2015 sample[8] of 206 communities in Northeastern Illinois, monthly billing was the most frequent billing cycle offered. Only 19 communities offered customers a choice in billing cycle, which may have implications for the affordability of a water bill.

BILLING CYCLES IN NORTHEASTERN ILLINOIS

Monthly Only	79
Bi-Monthly Only	66
Quarterly Only	42
Monthly or Bi-Monthly	13
Monthly or Quarterly	6

Data taken from 2015 Illinois Department of Natural Resources Water Rate Survey.

[7] Beecher, Janice (2010). Water Pricing Primer for the Great Lakes Region. *Alliance for Water Efficiency.*
[8] Illinois Department of Natural Resources, Office of Water Resources (2015). 2015 Lake Michigan Water Rate Survey.

WATER RATE STRUCTURES

With nearly all water utilities relying on user fees as a primary source of revenue, it places a spotlight on the process of rate setting and mechanics of billing customers. In the State of Illinois, water systems are managed by public organizations (e.g., municipalities), non-profit water utilities, or private entities. The Illinois Commerce Commission regulates private water utilities. While the governance structure and decision-making process for rate setting varies across these different types of organizations, all of them are tasked with setting the appropriate rates and billing customers in a way that will ensure proper maintenance of the system.

According to the Illinois Public Water District Act:[9]

"It shall be the duty of such board to establish rates and charges for water and water service, which shall be sufficient at all times to pay the cost of maintenance and operation, depreciation, and principal of and interest on all bonds issued and other obligations incurred under the provisions of Sections 1 through 23 of this Act."

[9] Illinois Public Water District Act

There are myriad factors that determine the cost of operating and maintaining a water system, and each system is unique. Once a governing body has determined the cost of its system, it must also determine a rate and billing structure that distributes the cost of the system across its users. Different rate structures distribute the cost differently and can send specific price signals to different types of users. Traditional rate structures include:

FIXED RATE BILLING

A standard rate is applied to a unit of water (e.g. 1,000 gallons) and users are charged based on the total volume that is used during a billing cycle.

DECREASING BLOCK RATE

A tiered structure of rates is developed based on volume, with the per unit rate decreasing as usage increases. This rate structure favors heavy users such as commercial and industrial users.

INCREASING BLOCK RATE

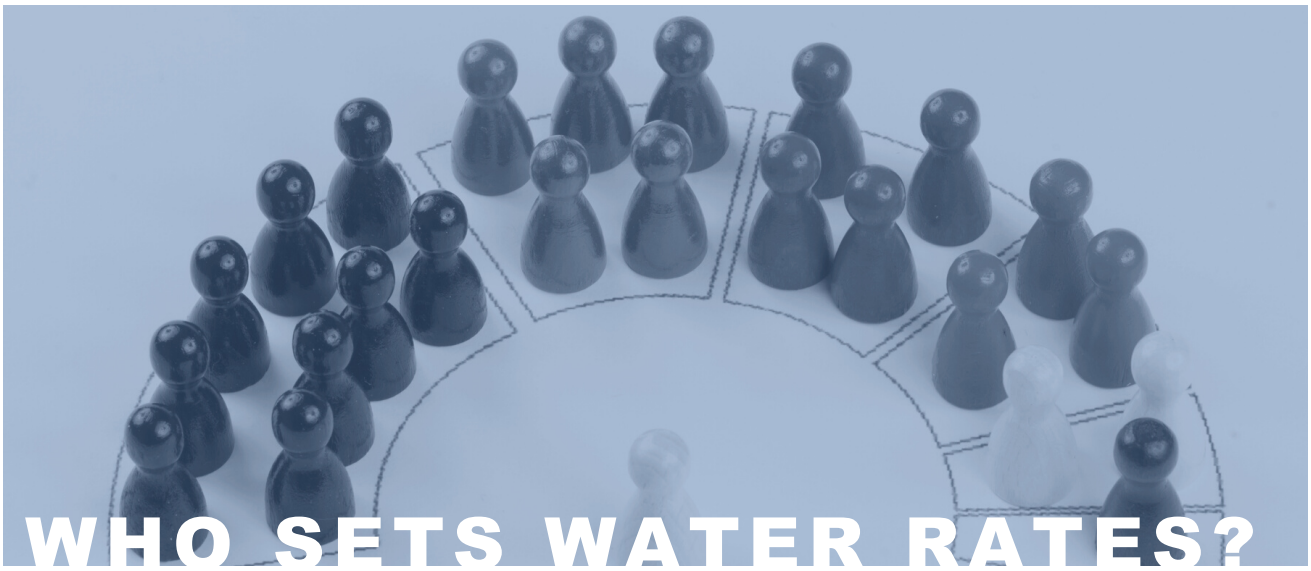
A tiered structure of rates is developed based on volume, with the per unit rate increasing as usage increases. This rate structure encourages water conservation and efficiency.

BUDGET BILLING

A user's consumption is averaged across the year to equalize billing amounts from month-to-month to provide a predictable bill amount.

While the overall cost of the system and administrative structure of the water provider can dictate the choice of rate structure, the goals of the community or governing board may also have some influence. For example, a community may adopt a decreasing block rate schedule in order to be competitive in their business recruitment efforts and incentivize heavy water users such as food manufacturers, industrial operations, and data centers. However, this strategy may result in residential users taking on a disproportionate share of the cost of the system, ultimately subsidizing these heavy users. Alternatively, a more conservation oriented water provider may elect an increasing block rate structure to incentivize users to be more conscientious consumers. As of 2015, within the Lake Michigan distribution system, fixed rate billing is the most common with 70% of communities adopting this rate structure, followed by increasing block rate structures at 19%.[10]

[10] Data taken from Illinois Department of Natural Resources, Office of Water Resources 2015 Lake Michigan Water Rate Survey.



WHO SETS WATER RATES?

Establishing a per unit rate for water is a core function of the governing bodies that oversee water systems. These governing bodies exist at the local level but vary in their form and function depending on the community. While a municipality is required to provide safe drinking water to their constituents, there are a menu of options on how to do so. A municipality may own and operate their own water system, elect to contract out to a private firm to own and manage the water system, or collaborate with neighboring communities to varying degrees. The combination of options for communities to take on the ownership and management of whole systems, or specific portions of one, has resulted in a multitude of governance structures that have an influence on the rate setting and billing processes. The individual set of options for communities is dependent on their own geography, economic base, and proximity to alternative production for both drinking water and wastewater treatment.

Communities that have invested into building and maintaining all components of a water system have the greatest degree of autonomy or flexibility in how to govern. Municipal water systems are often governed directly by the elected officials on a city council or board of trustees. However, elected officials may also choose to appoint individuals with technical expertise to serve on an advisory board that makes recommendations during the rate setting process.

Collaboration and contracting out is common in Illinois, though contracting out to a private water provider is much less common. As of 2012, only 3% of the population in Northeastern Illinois was

served by a private entity. Communities[11] may elect to purchase treated water from a neighboring community or rely on a special district to manage wastewater treatment. While this arrangement may be economically advantageous compared to constructing the necessary facilities, it exposes a community to the governing decisions of another body. City councils and boards of trustees may still be responsible for rate setting in their own community, but their decisions are influenced by those of other boards.

An alternative to contracting out for a portion of the water system is to establish an intergovernmental arrangement that may engage in joint purchasing agreements or create a new governing body that oversees an integrated water system that crosses jurisdictional lines. The governance structures of these collaboratives can take on different forms and processes for electing or appointing individuals to serve on the governing board.

Overall, the different governance forms and roles of appointed members to the governing boards of water systems results in a range of democratic accountability for the consumers of that water system. Deslatte et al.[12] provide a taxonomy of governance structures that governing boards can be assigned to for the purpose of comparison. These range from constituents directly electing officials to the water system's governance board to private providers where constituents have no direct oversight.

Political Oversight
City elected officials set rates directly

High Accountability Advisors
Appointed advisors make recommended changes to rates

High Accountability Ratemakers
Individuals appointed by elected officials set rates directly

Low Accountability Advisors
Individuals NOT appointed by elected officials recommend rate changes

Low Accountability Ratemakers
Individuals NOT appointed by elected officials have rate setting authority

Privatized Provision
Rate setting authority has been transferred to an external entity

[11] Chicago Metropolitan Agency for Planning (2012) Full-Cost Water Pricing Guidebook for Sustainable Community Water Systems.

[12] Deslatte, Aaron, Laura Helmke-Long, John M. Anderies, Margaret Garcia, George M. Hornberger, and Elizabeth Ann Koebele (2021). Assessing sustainability through the Institutional Grammar of urban water systems. *Policy Studies Journal.*

COST DRIVERS OF WATER RATES

Given Illinois' statutory requirement for rates to sufficiently cover the cost of maintaining a water system, it is important for governing boards to understand the factors that drive both short-term and long-term expenses. These can be categorized into fixed costs and variable costs.[13] Fixed costs are the expenses that are incurred by a system regardless of whether there is any use of water by customers. Variable costs are those that change based on volume and time factors of managing the system.

EXAMPLES OF FIXED COSTS

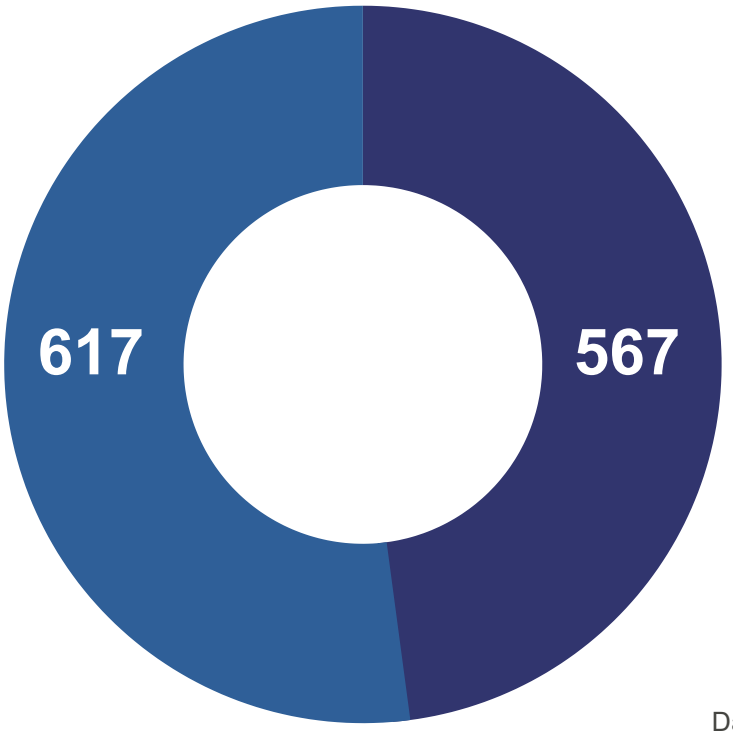
- Bond payments to build or repair physical infrastructure
- Salaries of employees that manage the day-to-day operations of the system

EXAMPLES OF VARIABLE COSTS

- Electricity used to extract, treat, and distribute water
  - Variable by demand for total volume of water
- Chemical inputs used to treat water
  - Levels of source contamination can affect this cost
- Short-term contracts for repairs or maintenance
  - Seasonal or emergency repairs come at different costs
- Water loss due to leaks in the system

Both fixed and variable costs of a water system are dependent on the overall design of the water system. Communities that own and operate all components of the water system have the most control over managing a system but may not be able to take advantage of economies of scale that could lower customers' bills. Alternatively, communities that outsource the production components of the water system are subject to management decisions of an outside entity that may also increase customers' bills. The degree of influence that a municipality may have on these outside decisions depends on the type of organization that is managing the outsourced water system.

[13] Beecher, Janice (2010). Water Pricing Primer for the Great Lakes Region. *Alliance for Water Efficiency.*



Drinking Water Production in Illinois as of 2012

Municipalities self-producing drinking water

Municipalities purchasing drinking water from outside entity

Data taken from 2012 Illinois State Water Survey

Joint Action Water Agencies or Water Commissions may have a board that includes stakeholders from the participating communities and allows collective decision-making. Private water providers are regulated by the Illinois Commerce Commission, including the approval of rate increases.

As of 2012, within Illinois, a slight majority of municipal governments elect to self-produce drinking water (52.1%) compared to purchasing from another entity (47.9%). Wastewater collection and treatment is another area where communities may not manage a component of the water system. Instead, special district governments have formed to consolidate regional wastewater collection and treatment. In instances where wastewater treatment is managed by an outside organization, charges may be billed directly by the water reclamation district or included in a consolidated bill where a municipality collects on behalf of the outside agency.

RATE SETTING PROCESS

Whether the variance in water rates charged to customers is due to the age of the water infrastructure, its state of repair (or disrepair), water leakage, the structure of the supply network, poor billing practices, or other factors is not currently known. Yet, evidence shows that accessibility to clean drinking water is an important social determinant of individual and community health. So, understanding the drivers behind variance in water rates is vital for crafting public policy that ensures all households have access to clean and safe drinking water as a way to promote public health.

The purpose of the “Water Rate Setting Study” being undertaken by the Government Finance Research Center at the University of Illinois Chicago is to research how municipalities and water districts establish rates, what factors influence rate adjustments, whether equity and affordability are integrated into the rate-setting process, how rate-setting varies between economically advantaged communities and high poverty communities that were disproportionately negatively impacted by the Covid-19 pandemic, and how such variation impacts the accessibility of drinking water for community residents. Case studies will be used to determine how and why rates are set, the differential impact on consumers, and the differential impact of such changes on various cohorts of

of consumers (by income, neighborhood, race, etc.) across a variety of communities.

The final reports for this project will address the seven critical purposes, as outlined in Public Act 101-562 (approved in 2019) and amended by Public Act 102-507 (approved by Governor Pritzker on August 20, 2021). The research reports will address, at a minimum, the following:

- The components of a water bill
- Reasons for increases in water rates
- The definition of affordability throughout the State and any variance to that definition
- Evidence of rate-setting that utilizes inappropriate practices
- The extent to which State or local policies drive cost increases or variations in rate-settings
- Challenges within economically disadvantaged communities in setting water rates
- Opportunities for increased intergovernmental coordination for setting equitable water rates and increasing access to drinking water for residents of economically disadvantaged communities

These reports produced from the research will include recommendations for policy and regulatory needs at the state and local levels with the underlying goal of achieving greater equity in water rates paid by residents throughout the state of Illinois and ensuring all residents have access to clean, safe drinking water.

Government Finance Research Center

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