



ELEVATE
Equity through climate action

Metropolitan **Planning Council**

City of Chicago

Water Affordability Analysis

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Joyce works to solve long-term environmental challenges that threaten the next generation in the Great Lakes region. For more than two decades, it has been a leading foundation funder of policy work related to the Great Lakes. We work to address three of the region's critical long-term environmental challenges: climate change, the safety and accessibility of the water we drink, and the health of the Great Lakes.

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Key Terms

1. **Water Affordability**

A function of the interaction between two factors: 1. Cost of service (what is the water rate and what does a customer’s water bill cost?) and 2. Income (what is the customers’ ability to pay for the service?).

2. **Water Bill Burden**

A ratio based on the percentage of a household’s income that goes toward paying water bills.

3. **Water Debt**

The previous balance listed on the current bill minus the payments listed on the current bill.

4. **Income Quintile**

A measure of socioeconomic status that represents 20% of the population in a given geographic area. The first income quintile represents the lowest fifth of income earners (1% to 20%).

5. **Affordability Threshold**

Defining the upper limit of the percentage of household income that a commodity consumes.

Executive Summary

Introduction

Water affordability is a growing issue in the Great Lakes region and across the nation. The American Society of Civil Engineers estimates that the nation's water infrastructure will need at least \$1 trillion in upgrades over the next 25 years.¹ Today, utility customers—or the rate-paying base—provide most of the funding for necessary water infrastructure upgrades.² This results in rising water costs for utility customers and places a significant financial burden on low-income households. Since 2010, the average monthly U.S. residential water bill has gone up by 62%³ and an estimated one third of households will soon find their water bills unaffordable if water rates continue to rise at the expected pace.⁴

Solutions are needed to help households respond to the growing cost of water. In 2019, Elevate, the Metropolitan Planning Council (MPC), and the Illinois-Indiana Sea Grant (IISG) [published a report](#) and accompanying [dashboard tool](#) that examined the extent of water burden in northeastern Illinois. This report used only public data and a standard usage assumption, and the report authors did not have access to real customer billing and usage data, which is a key component to understanding the underlying issues of water affordability in a specific community.

As a result of this work, Elevate and the Metropolitan Planning Council partnered with the City of Chicago in Spring 2020 to further research the specific scale and scope of water affordability challenges for its residents. The team analyzed actual data on residential water billing and usage, residential leakages, and building type; Census data on income and demographics; and conducted interviews with Chicago residents, City of Chicago Department of Finance staff, and affordability program managers. The team also interviewed residential water customers and water utility staff in cities across the United States who have implemented water affordability programs, policies, and/or rates to better understand lessons learned and best practices that may be applicable for Chicago. **The goal of this quantitative and qualitative analysis is to provide tailored policy and program recommendations to the City of Chicago on how it can equitably address issues related to water affordability, which includes addressing water bill burden, water debt, metering, shut-offs, plumbing leaks, data management, and customer service.**

¹ American Society of Civil Engineers. [Infrastructure Report Card](#). March 2017.

² National Consumer Law Center. *Review and Recommendations for Implementing Water and Wastewater Affordability Programs in the United States*. National Consumer Law Center, Inc., 2014.

³ Circle of Blue. [The Price of Water](#). June 2019.

⁴ Mack, E. A., and Sarah Wrase. (2017) A Burgeoning Crisis? A Nationwide Assessment of the Geography of Water Affordability in the United States. *PLOS ONE*.

CHICAGO'S PROGRESS TO-DATE

In recent years, the City of Chicago has undertaken several important initiatives to address water service and affordability issues. Those activities include:

- A moratorium on water shutoffs since December 2018 and a moratorium on shutoff postings for nonpayment since May 2019 at the beginning of the Lightfoot Administration.
- Creation of the Utility Billing Relief (UBR) program which addresses past water debt by providing a 50% rate reduction on water, sewer and water-sewer taxes while enrolled in the program, and aligns its application process with the Low Income Home Energy Assistance Program (LIHEAP).
- Updating the billing system to bill monthly for water usage for nonmetered accounts (metered accounts were already billed every other month).
- Efforts to assist previously disconnected accounts with next steps to have their water restored.
- A general desire to learn more about water affordability challenges facing Chicago residents demonstrated by:
 - Hosting weekly water advocate calls to hear from community groups and local experts and
 - Sharing data and requesting additional research analysis.
- Installing over 130,000 meters for single family and 2-unit buildings through the MeterSave Program so they can be billed for their actual water usage as opposed to being billed on estimated usage. Residents in the program also received a 7-year cap on water and sewer billing and a water conservation kit.
- Offering senior citizens an exemption for sewer charges.

We recognize the City of Chicago and the Lightfoot Administration for taking necessary action, and continuing to listen, learn, and implement solutions to address critical issues of water service and affordability for residents.

Key Findings and Recommendations

The following highlights the key findings the project team identified from the quantitative and qualitative research conducted. These findings helped shape the recommendations proposed in this report to address water affordability challenges in the City of Chicago.

QUANTITATIVE FINDINGS

1. Water bill burden for Chicago's lowest income quintile is, on average, well over the commonly accepted "affordability threshold", particularly for nonmetered customers. Higher income quintiles have less burden but still face affordability issues.
2. Water charges alone do not explain the affordability issue in Chicago. Other charges composing the water bill (e.g., garbage fee and taxes), and high arrears must be included in any strategy to improve water affordability.
3. Water debt carries significant weight when discussing affordability, with unpaid balances accruing over time and payment arrangements being mostly insufficient to address nonpayment.
4. Nonmetered customers face more affordability challenges than metered customers, in terms of bill amount, debt amount, and water bill burden.
5. Water affordability is not an issue confined to single family. Multifamily buildings, particularly 2-5 unit buildings and 12+ unit buildings, see the highest rates of nonpayment and increases in debt over time, and 2-unit buildings have the highest average burden.
6. Water bill burden exists throughout the city. More than half of the Census tracts in Chicago are rated "High" on the water affordability matrix, meaning they have both a majority of residents that are low income (at or below 80% AMI) and rates of water bill burden for the lowest income quintile over 4.5%.
7. Water bill burden is not evenly distributed. Water bill affordability is a racial equity issue, with accounts in majority Black, Hispanic, and Asian populated tracts less likely to be metered, more likely to have leaks (for those metered and receiving Run Continuous letters) and facing on average a higher burden while using comparatively less water than accounts in majority white (non-Hispanic) tracts.

QUALITATIVE FINDINGS

1. Residents who struggle to afford their water bill also struggle to afford other necessities and are regularly making trade-offs to pay for basic needs.
2. Literacy can be a hindrance to fully engaging with water agencies. This is further compounded by the digital divide, and changes in community composition have resulted in challenges to accessing information, especially among older residents who used to rely on younger members of the community for help.
3. Difficulty reading and understanding water bills leads to distrust. We heard this from Chicago residents and during nationwide residential interviews. In the nationwide interviews, many believed there were hidden charges on the bill.
4. Unfamiliarity with internal plumbing and water infrastructure leading up to the home is a challenge to resolving water affordability issues. Some residents do not know whether they have a water meter installed, and if so, where the meter is located. Others would like more information and resources on how to identify and repair leaks, including faster/real-time notification of leaks (i.e., Run Continuous letter).

KEY RECOMMENDATIONS

From our qualitative and quantitative findings, Elevate and MPC recommend the City of Chicago focus on the following initiatives to address water affordability challenges.

Each recommendation is followed by the suggested timeframe for implementation:

- Short-term (ST): 6 to 12 months
- Medium-term (MT): 12 to 24 months
- Longer-term (LT): 24 months or more

1	Water Bill Burden and Debt	ST	MT	LT
1.1	Implement universal metering for all residential accounts in the City of Chicago, with an understanding that lead service lines must be addressed concurrently.			X
1.2	Conduct a thorough evaluation of the Utility Billing Relief (UBR) program to determine success and needed improvements and communicate those findings with water advocates and the public.	X		
1.3	Implement UBR program satisfaction surveys 12 months after participant graduation to understand program impacts.	X		
1.4	Expand on the robust UBR enrollment campaign.	X		
1.5	Expand the UBR program to include more residents in need of assistance (expand income eligibility, include renters and 3-4 unit buildings) and reach out to customers experiencing especially high bills for emergency plumbing assistance.		X	
1.6	Enhance enrollment and outreach efforts for State and City water bill assistance programs that target renters who are not eligible for an expanded version of UBR.	X		
1.7	Review and improve the Payment Arrangements program considering models that provide more flexible payment options, as allowable.		X	
1.8	Closely monitor developments with federal and state COVID economic relief funding to support City efforts to help residents struggling to pay their water bills.	X		

2	Customer Service and Outreach	ST	MT	LT
2.1	Continue to move customers to a monthly billing cycle.	X		
2.2	Review the existing bill format and redesign it to be easily understood in multiple languages.		X	
2.3	Invest in building a relationship with residents through public meetings, improved communications, surveys, focus groups, and partnerships.	X		
2.4	Continue to be transparent about available bill assistance opportunities (including opportunities beyond water relief).		X	
2.5	Move toward a universal application for all affordability assistance programs.			X

3	Water Shutoffs and Residential Leakage/Plumbing	ST	MT	LT
3.1	Continue the moratorium on water shutoffs and the moratorium on shutoff postings for nonpayment.	X		
3.2	Continue to reinstate service for households that have been disconnected, and, building off the current water reconnection pilot, launch a plumbing repair program to help low-income households address leaks, emergency plumbing issues, broken faucets, toilets, and more.	X		
3.3	Due to the case management needs of some customers, partner with Chicago Department of Family & Support Services (DFSS), or other agencies and nonprofits in the mental health or public health sector, to assist customers experiencing longer-term water shutoffs as part of the leak repair program.			X
3.4	Issue leak alert or spike in use notices via text and email, and more frequently than once a month (will require an Automatic Meter Reading [AMR] system).			X

4	Water Rates, Fees, and Taxes	ST	MT	LT
4.1	Review, update, and communicate to customers about billing and collection policies.	X		
4.2	Conduct an updated cost of service study and explore what an alternative, affordable water rate structure could look like in the future for retail customers (residents and businesses) in the City of Chicago.		X	
4.3	Further research how sewer rates, garbage fees, and various taxes could be altered to make water utility bills more affordable.		X	
4.4	Formulate a new calculation for taxes on nonmetered bills in the interim given that lead service line replacement and meter installs will likely take many years.			X

5	Operations and Data Management	ST	MT	LT
5.1	Streamline all databases to improve communications with residents.			X
5.2	Continue to foster inter- and intradepartmental dialogue to support staff and encourage innovation.			X
5.3	Ask/survey staff on ways to improve operations, programs, and communications with residents.		X	
5.4	Continue to partner with research institutions for UBR evaluation, other water program pilots, and correlating evaluations.			X

6	Mission, Leadership, and Public Engagement	ST	MT	LT
6.1	Amplify the Department of Water Management mission statement that guides and publicizes the City of Chicago's (and other appropriate departments') commitment to providing safe, affordable water, and excellent customer service.		X	
6.2	Develop an overarching water affordability plan for the City of Chicago.		X	
6.3	Build a water career pipeline for youth and adults with a key focus on equity, diversity, and inclusion.			X
6.4	Strengthen external messaging to communities by deploying a community engagement plan that involves and elicits feedback from residents in a culturally appropriate way.		X	

Analysis and Findings

Quantitative Analysis – Data Review

DATA OVERVIEW

The quantitative analysis for this report was conducted on a large set of water account data provided to Elevate by the City of Chicago, for the years 2015 to 2020. The data consisted of:

- Multiple files containing over 8.9 million water bills for 577,000 residential customer accounts⁵
 - Water bills from the City of Chicago include the following charges:
 - Water charge
 - Sewer charge
 - Garbage charge (for single family and 2-4 unit buildings, starting 2016)
 - Taxes (starting 2017)⁶
 - Penalties
 - Other charges (e.g., Full Payment Certificate cost)
 - 21 residential building types (see Table 1 for the types examined in this analysis)
 - See Appendix 2: List of Data Variable Received for a full list of data fields provided
- A single file containing 445,000 Payment Arrangement records representing 111,000 accounts
- A single file containing 202,000 Run Continuous (potential leak notification) letter records representing 68,000 addresses
- A single file containing latitude and longitude for building addresses

This data was combined, cleaned, and analyzed using STATA software and Microsoft Excel. We analyzed this data for relevant patterns and differences in variables such as cost, usage, and payment behavior across time, building type, metering status, and more. The goal of the research was to identify levels of water bill burden faced by Chicago residential customers, assess any affordability patterns, and attempt to identify areas of opportunity for improving the issue of water affordability in the City.

ASSUMPTIONS AND LIMITATIONS

This analysis reflects bills and charges from 2015 to 2020, however, it is important to contextualize the data over a longer timeframe. During this period, the water rate alone (dollars charged per thousand gallons) increased, but at a pace that is relatively low compared to the rate increases from 2010 to 2015.⁷ In the past 10 years, water rates have increased 103%, mostly between 2011 and 2015. Over the same period, household income has increased only 35%. This scenario is not unique to Chicago, as many cities have faced the problem of needing to increase rates to cover infrastructure and other costs while incomes stagnate. For more on this, see the [Northeastern report](#). The period from 2015 to 2020 did see the addition of two new bill line items: garbage charges (2016) and taxes (2017).

⁵ The total number of accounts includes active accounts and accounts that became inactive within the 2015-2020 period.

⁶ In 2017, Chicago passed new taxes to be levied on the water/sewer bill, going toward mandated pension payments. Prior to that, there were no taxes on the water bill. [City of Chicago Utility Tax FAQ](#).

⁷ City of Chicago, Department of Finance. [Water and Sewer Rates](#).

In addition to the above context, other notable assumptions and limitations are listed below.

- This analysis focuses on only a few of the building types provided in the data—single family, 2-5 unit buildings, 6-12 unit buildings, and 12+ unit buildings (City of Chicago designations). These represent most accounts and were also the cleanest building types in the dataset (for example, there are four different building types which all refer to townhouses—we did not include these in our analysis).
- There are statistically insignificant numbers of 5-unit buildings.
- Shutoff data was not included in this analysis. The data was not provided at the same scale and did not prove to be reliable for conclusive outputs to inform recommendations.
- Metered versus nonmetered buildings have clear differences in bill amounts; thus, portions of the analysis look at these categories separately to identify areas of correlation or difference besides metering status.
- For most variables in the data, there were significant outliers. Examples include a single bill covering dates of more than one year, or bill amounts in the negative thousands of dollars. As much as possible, we cleaned the data to remove the influence of these outliers, but this is a reminder that this analysis relies on the inherent assumption that the data we received is accurate, an assumption that we did not (and could not) test.
- In 2020, the City of Chicago launched the Utility Billing Relief (UBR) program to address water debt. The data used in this analysis ends in April 2020, thus we are not able to conduct any specific quantitative analysis on UBR at this time.
- Similarly, this data and analysis does not reflect the impacts of COVID-19 and the shutdown that began in March 2020.

UNDERSTANDING WATER BILL BURDEN

Water bill burden is the percentage of a household’s income that goes toward paying water bills. Water bill burden is a commonly used metric in the industry that adds context to the discussion of affordability, providing useful insight about potential challenges residents are facing while trying to balance their other priorities and expenses. However, unlike the commonly seen metric that one should spend no more than 30% of their income on housing costs, the exact threshold of what water bill burden level is “too high” is still debated in the industry. The often misunderstood and misused EPA standard is a 2.5% burden for bills that only include water charges; for bills that include water and sewer, the standard is 4.5%.⁸ We reference these thresholds in the analysis as a point of comparison only, and we identify other factors such as rate of debt and nonpayment to broaden the conversation beyond a single percentage measurement.

Because household-level income data is not available, we used income quintiles⁹ at the census tract level to calculate water bill burden. This methodology gives us an income proxy at a small geographic scale and allows us to view water will burden at different economic levels, rather than assigning everyone to the median income. An income quintile is a measure of socioeconomic status that represents 20% of the given population.

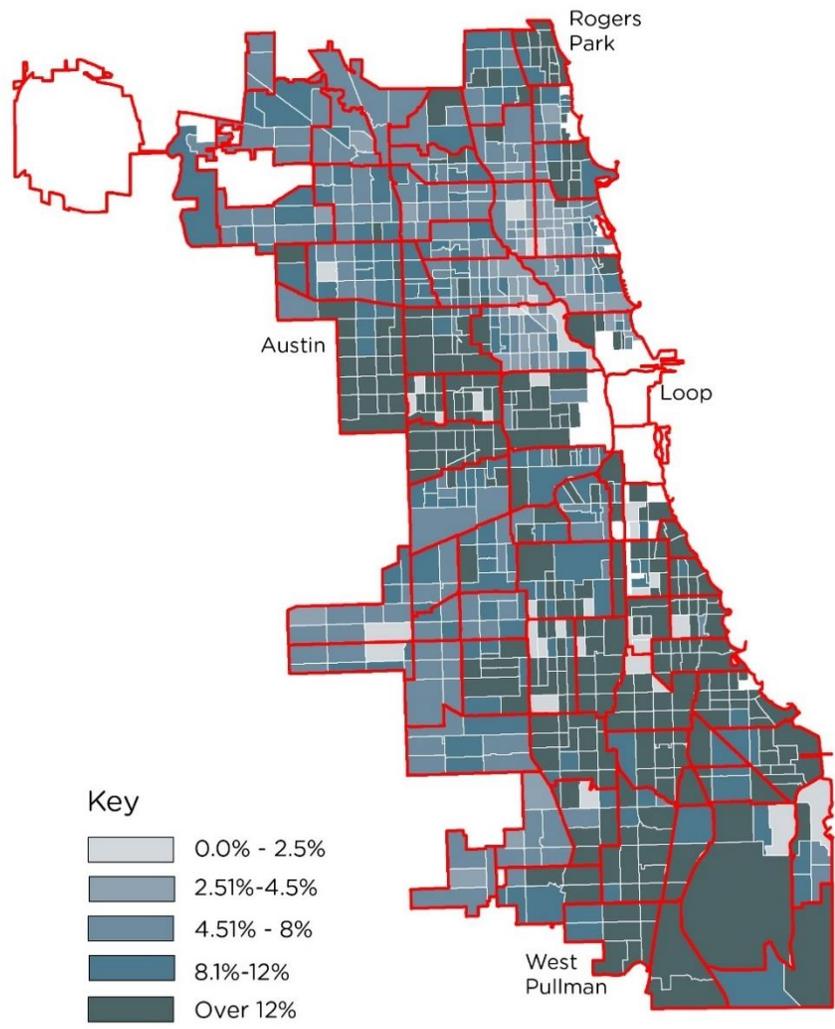
⁸ EPA affordability criteria identified in 1998, in its National Level Affordability Criteria. These criteria were meant to describe system-level rather than household-level affordability.

⁹ An income quintile is a datapoint calculated by the Census. It is a measure of socioeconomic status that represents 20% of the given population. For this analysis, income quintiles at the census tract level were used. The “lowest income quintile” means those households whose income is in the bottom 20% for their tract. The actual income amount in this group varies by tract because it is relative to the other households living in that tract.

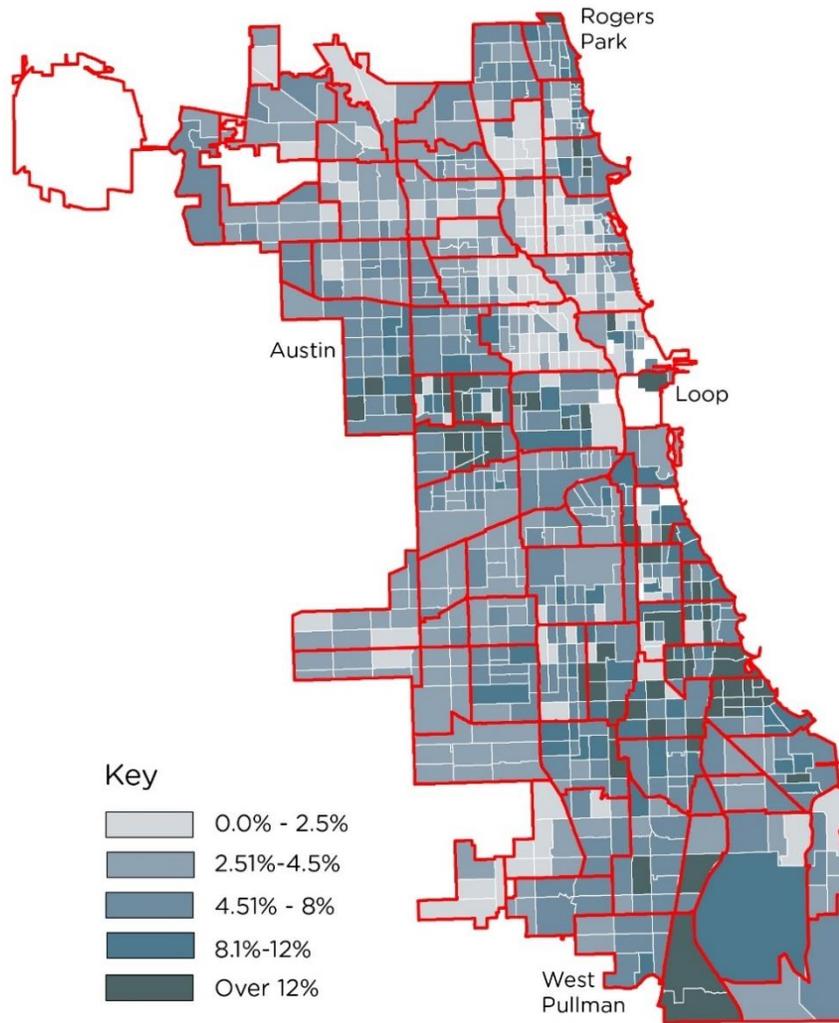
Water Bill Burden Findings

The following maps display water bill burden levels throughout the City of Chicago at the lowest income earning quintiles (Q1 and Q2). Water bill burden levels are also separated by metered and nonmetered customers given the major differences in bill amounts. Each of the four maps are color coded to the same burden categories for direct comparison.

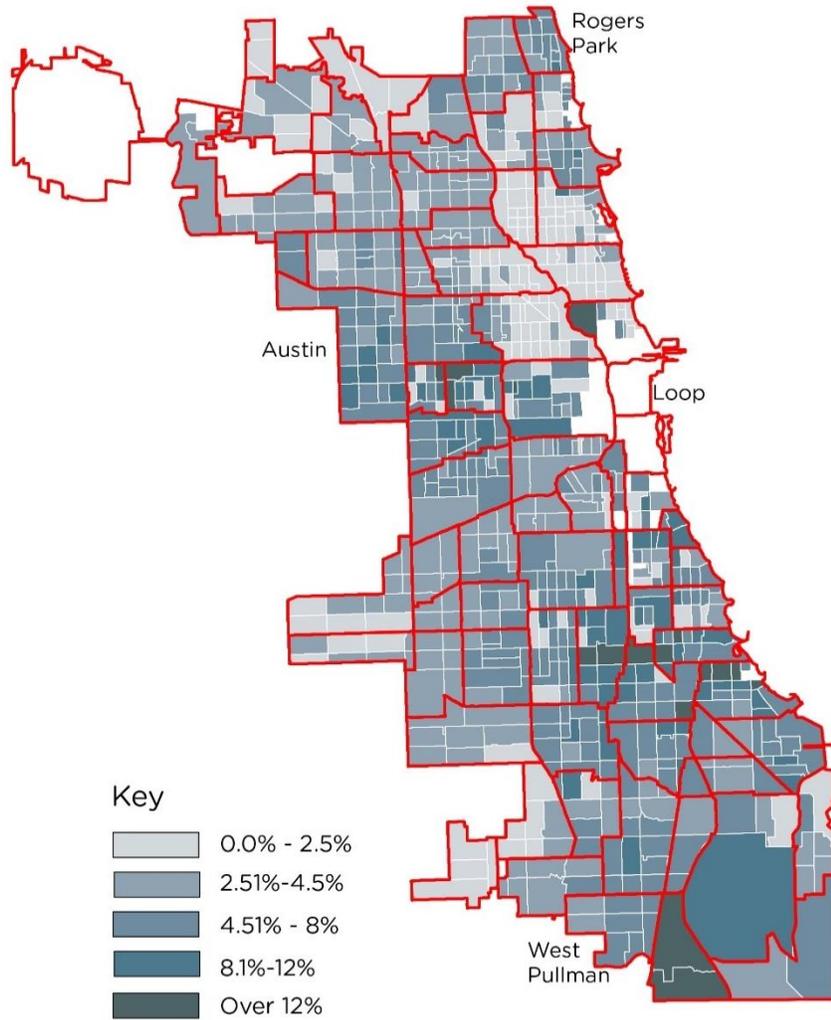
Map 1: Water Bill Burden per Unit for Lowest Income Quintile Households, Nonmetered Customers



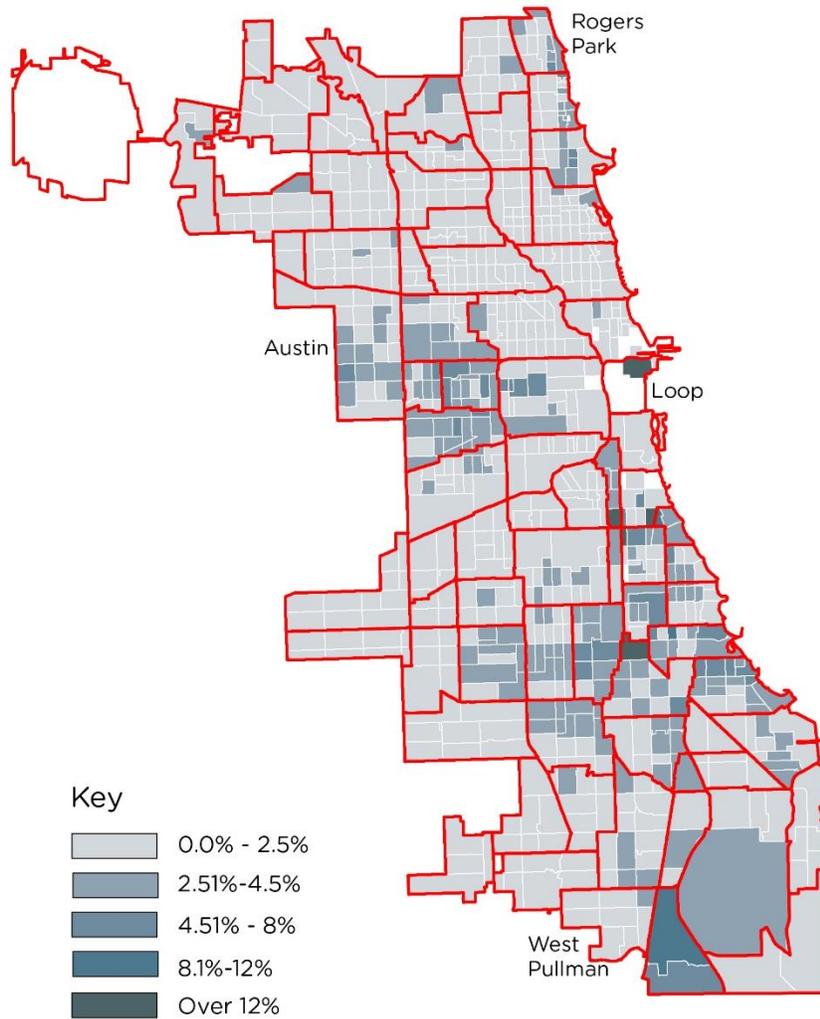
Map 2: Water Bill Burden per Unit for Lowest Income Quintile Households, Metered Customers



Map 3: Water Bill Burden per Unit for Second Income Quintile Households, Nonmetered Customers



Map 4: Water Bill Burden per Unit for Second Income Quintile Households, Metered Customers

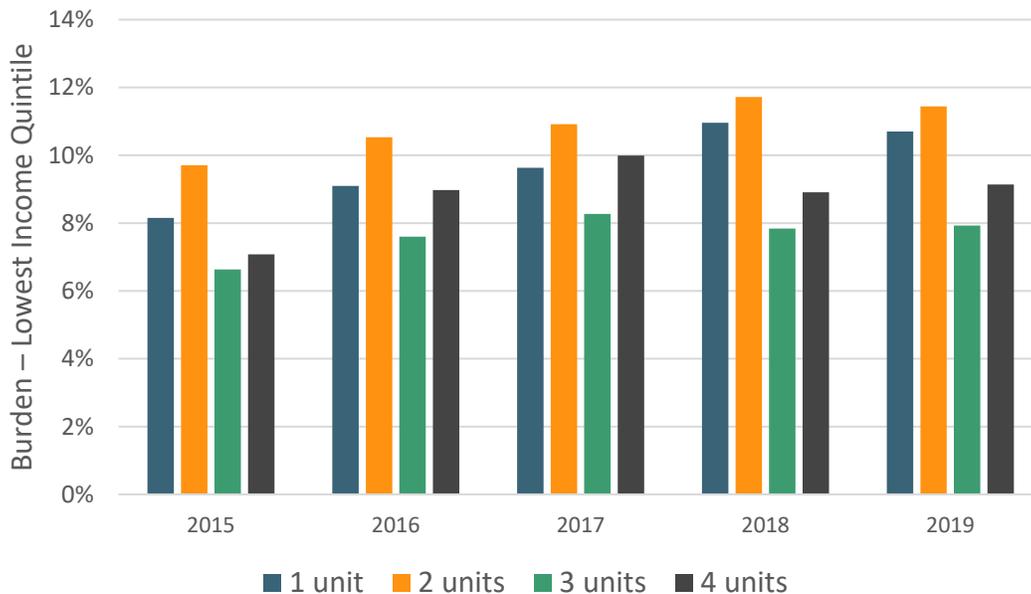


The maps illustrate a significantly higher rate of water bill burden for nonmetered customers in both income quintiles. The darkest color in each map represents an average tract burden of over 12%, and the maximum burdens in some tracts can be over 100% for areas with high average bills and the lowest income quintile (Q1-income) amounts. Very few tracts in the maps have a water bill burden at 2.5% or below (the lowest category of burden). The maps show the breadth of the affordability issue, not only for those in the lowest income quintile, but also for those without meters.

While the maps illustrate water bill burden in 2019, it is important to note that water bill burden levels have increased since 2015 for all building types, reflecting both an increase in bills and low rate of income growth in many areas. It also varies somewhat by building type, with 2-4 unit buildings seeing the highest rate of burden (see Figure 1).

Figure 1: Water Bill Burden for Lowest Income Quintile Households, by Building Size, Metered and Nonmetered*

*Assumes number of units is equal to number of households

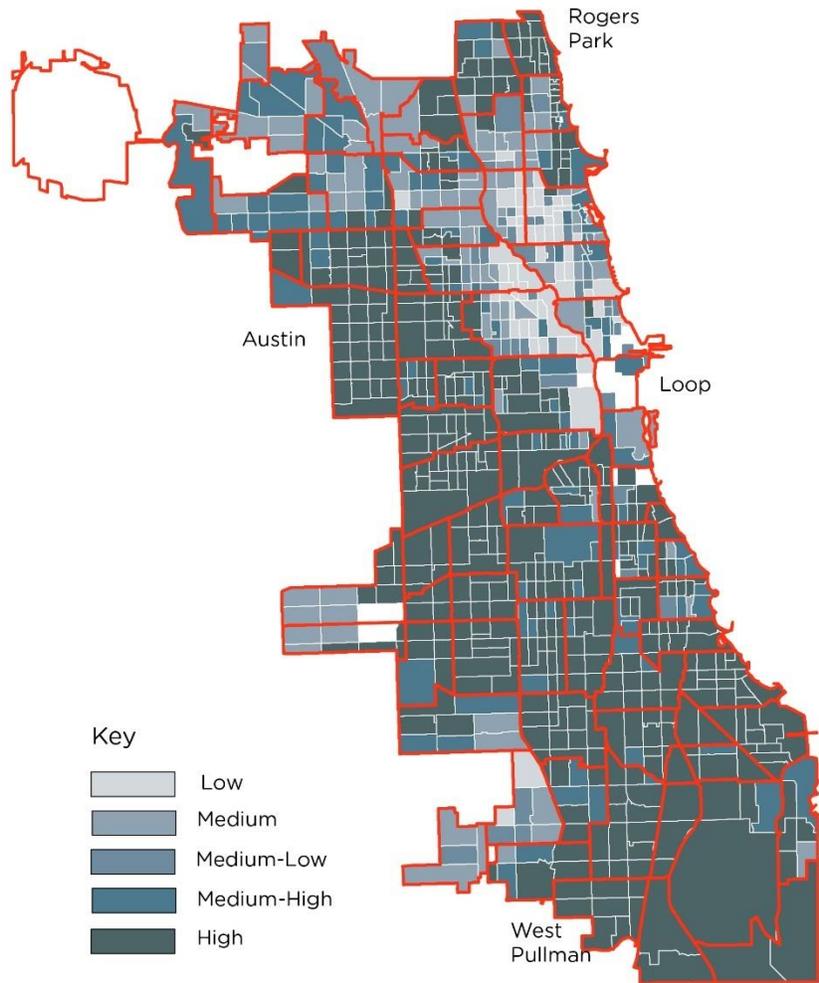


To provide a more nuanced view of water affordability challenges in Chicago, our team also created a water affordability matrix. The affordability matrix combines two metrics: household expenditures on the combined water and sewer bill as a percentage of household income, and the percent of households earning below 80% area median income.¹⁰ This creates an affordability gradient from low to high burden across all tracts, highlighting areas with the most need. This matrix and the results for Chicago at the Q1-income burden level can be seen in Figure 2. It is clear from this map that most tracts in Chicago are in the “high category” for the lowest income households.

¹⁰ Elevate Energy and Metropolitan Planning Council. [Water Affordability in Northeastern Illinois](#). February 2020. ©2022 Elevate Energy

Figure 2: Water Affordability Matrix, Nonmetered Customers (Table and Map)

Burden Level	>50% population 80% AMI	25% to 50% of population 80% AMI	0 to 25% of population at or below 80% AMI
4.5% Burden or Greater	High	Med-High	Med-High
2.25% to 4.5% Burden	Med-High	Med	Med-Low
0% to 2.24% Burden	Med-High	Med-Low	Low



BILL AND USAGE ANALYSIS

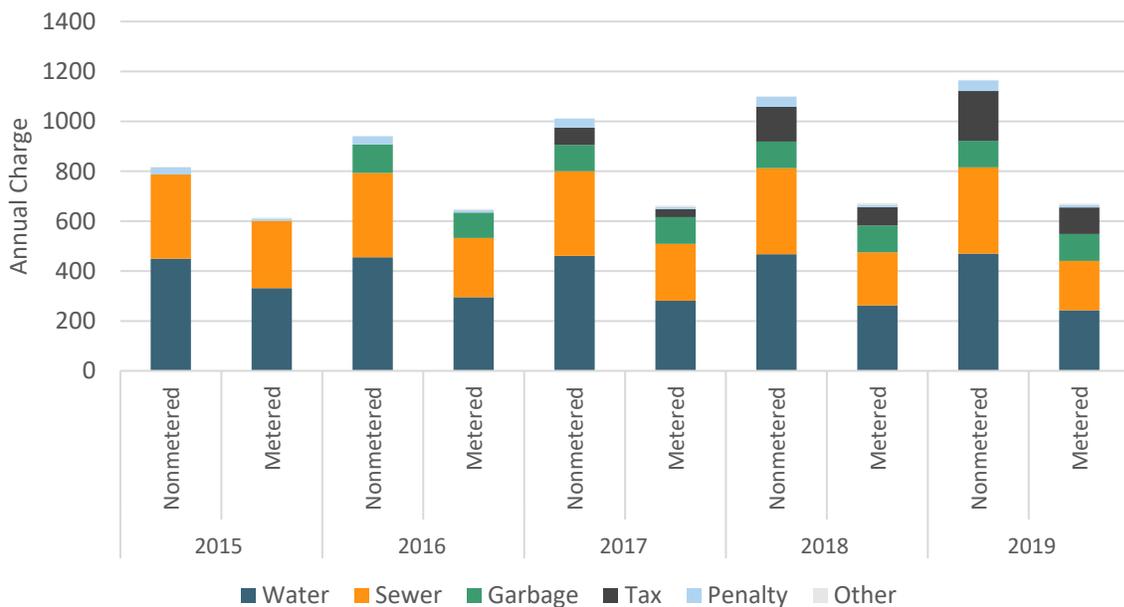
Table 1 below shows total water bills have increased for all building types since 2015, with the greatest increase in 2-5 unit buildings. Meanwhile, total usage for metered customers has decreased. The underlying factors for the decreased usage could vary widely: It could be related to more buildings becoming metered over the last five years, households actively reducing consumption in response to rising bills, household sizes decreasing, or other factors.

Table 1: Average Water Bill Increase by Building Type, 2015 compared to 2019

Building Type	2019 Avg Bill	% ↑ from 2015 Avg	2019 Avg Usage (tgal)	% ▲ from 2015 Avg Usage (tgal)	2019 Avg Bill Per Unit	% ▲ from 2015 Avg per Unit Bill	2019 Avg Usage Per Unit	% ▲ from 2015 Avg per Unit Usage
Single Family	\$ 927.61	27%	62.26	-3%	\$927.61	27%	62.26	-3%
2-5 Units	\$ 1,801.83	31%	133.77	-11%	\$747.31	30%	48.99	-6%
6-12 Units	\$ 4,212.46	8%	423.76	-17%	<i>N/A: Unit counts not available.</i>			
12+ Units	\$ 15,857.33	28%	1605.91	-2%				

The difference in nonmetered and metered charges is clear, as well as the increasing costs over time. For example, in 2015, nonmetered single family customers paid on average \$200 more per year than metered customers (see Figure 3). By 2019, nonmetered single-family bills had increased by an average of \$346. For someone making \$8/hour, that represents an extra week of work to cover the increase in water bills.

Figure 3: Single Family Annual Bills



By 2019, nonmetered customers were paying on average \$500 more annually than metered customers. One reason for this is that, over the last five years, additional non-water charges added to the bill have contributed significantly to the overall bill increase. Also, when taxes are a function of the water and sewer charge, those with higher charges will have higher taxes. Nonmetered accounts also appear to be paying more in annual penalty charges, again reflecting the difficulty nonmetered customers may be having in paying their bill in full. Appendix 4: Annual Bills Breakdown, by Metering Status shows annual bills over the last five years for various building types.

METERING ANALYSIS

Buildings without meters are charged for water based on a complicated formula using building width, number of stories, and other variables. According to the data, single family and 2-unit buildings represent almost all nonmetered accounts (see Table 2).

Table 2: Percentage of Nonmetered Accounts by Building Type

Building Type	% Nonmetered*
Single Family	52%
2-Flat	42%
3-5 Flat	<1%
6-12 Units	<1%
12+ Units	<1%
Condos	<1%
CHA	12%
Townhouse	5%
UBR	55%

Until late 2020, nonmetered accounts were billed typically every six months, while metered customers received a bill every two or three months, so each individual metered bill was smaller. Even annually nonmetered customers pay significantly more than metered customers, a gap which has increased over the past five years. As seen in Table 3, nonmetered customers also pay more in penalties, both in terms of the percent of customers who were charged a penalty of any amount in 2019, and the average amount of penalties they were charged. Since the main source for penalties is late/nonpayment fees, this is another reflection that nonmetered customers seem to struggle more to pay their bills on time and in full.

Table 3: Penalties Analysis for Single Family and 2-Unit Buildings

Building Type*	Percent of customers who received some amount of penalty charge, 2019		Average annual penalties, for customers with some amount of penalty charge, 2019	
	Nonmetered Customers	Metered Customers	Nonmetered Customers	Metered Customers
Single Family Buildings	37%	32%	\$113	\$31
2-Unit Buildings	48%	39%	\$256	\$60

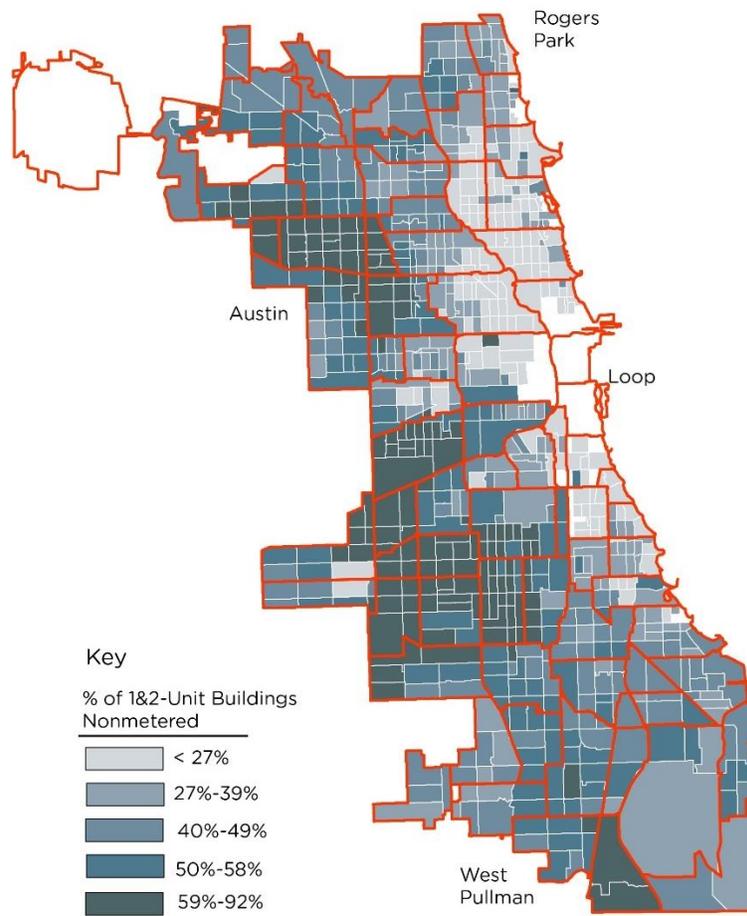
* Data based on latest bill for all accounts in the last year, to represent current metering status. Almost all 3+ unit buildings are metered so they were not included in this comparison.

The distribution of metering for single family and 2-unit properties can be seen in [Map 5](#). While there are areas on the southwest, west, and northwest sides with dense concentrations of nonmetered accounts, the issue is widespread throughout the City with only a minority of tracts in the Loop and north side having less than a quarter of accounts nonmetered. The two darkest colors, representing that more than half of the accounts in the tracts are nonmetered, appear throughout the City. This indicates that any work to add meters will need to be approached City-wide, though there are areas that could be prioritized based on having the highest concentrations of nonmetered buildings and water bill burden.

MeterSave, 2009 - 2019

In 2009, the City of Chicago launched MeterSave, a voluntary program for single family and 2-unit building homeowners to have water meters installed for free. The main benefit of the program was that homeowners would pay only for the water they use after the meter was installed, whereas nonmetered homes pay estimated charges based on factors such as building size and number of fixtures. The program successfully installed over 130,000 meters citywide. The program was halted when potential increases in lead levels associated with meter installations were discovered in 2019. According to the City of Chicago Department of Water Management (DWM), over 10,000 people are still on the waitlist to have meters installed pending the results of a research study to switch to a meter style that may alleviate issues related to lead.

Map 5: Nonmetered Status by Tract, Single Family and 2-unit Buildings



Run Continuous Letters

One additional file included 202,000 Run Continuous letters sent to 73,000 accounts. A Run Continuous letter is a leak notification letter, sent when the meter registers a code that water has been running continuously for a two hours within the previous 24 hours of the read date and time. Nonmetered accounts do not receive these letters because there is no meter to measure water flow. Accounts that have received at least one Run Continuous letter have on average higher bills, higher usage, and higher debt than those that have not received a letter. However, they represent a small percentage of all bills and accounts. While addressing leaks is important and could improve overall system efficiency, it should not be regarded as the main driver of high bills.

WATER DEBT ANALYSIS

The analysis thus far has looked at current bill charges and total bill—standard datapoints used in determining burden. However, this analysis leaves out an important piece of affordability—the impact of outstanding balances—and underestimates customer challenges.

This next set of analyses discusses water debt directly. Using the available data, water debt is measured as *the previous balance listed on the current bill minus the payments listed on the current bill*. A bill in which the payment amount matches the previous balance is considered paid in full; a bill in which the payment is less than the balance is considered to have an outstanding balance.

Key findings from the water debt analysis include:

- The percentage of accounts with an outstanding balance is higher for nonmetered than metered buildings.
- The 2-5 unit buildings have the highest percentage of accounts with outstanding balances for both metered and nonmetered accounts.
- The average percentage of metered accounts with an outstanding balance in their latest bill as of April 2020 is 17%, while for nonmetered accounts (single family and 2-5 units only) the average is 30%.
- For around 20% of those customers with outstanding balances, the total amount owed is greater than a year's worth of regular bills. This is about 5% to 6% of all customers; this percentage has increased between 2017 and 2020, and it is considerably higher in tracts with a majority of Black residents.

The findings communicate that a considerable portion of account holders are not paying their bill in full and/or on-time. Considered another way, of the total amount owed to the City for water bills at the end of April 2020, approximately 50% were new charges from the latest bill and the other 50% is unpaid balances from prior bills.

When looking at the change over time, the number and percentage of accounts with an outstanding balance is steady, yet the *amount* of the outstanding balance has increased from 2015 to 2019, an increase that is escalating faster than the rate of bill growth (see Table 4). It is also increasing for nonmetered accounts at a greater multiplier than metered accounts, even as the total number of nonmetered accounts decreased slightly. Customers are finding it challenging, or are completely unable, to pay off the snowballing debt.

Table 4: Average Bill Debt Analysis by Building Type

Building Type	2019 Average Bill ¹	% Increase from 2015 Avg Bill	2019 Avg Bill Amt Unpaid ²	% Increase from 2015 Avg Debt	% Increase of # of Accounts in Debt
Single Family	\$ 928	27%	\$ 1,357	63%	8%
2-5 Units	\$ 1,802	31%	\$ 2,783	71%	1%
6-12 Units	\$ 4,212	8%	\$ 4,102	39%	0%
12+ Units	\$ 15,857	28%	\$ 9,796	73%	5%

1 – All customers; 2 – Customers with outstanding balance

Payment Arrangements

One option for customers struggling to pay their bills is to enter a Payment Arrangement, an option that has been in existence for far longer than the UBR program. One additional file included 445,000 Payment Arrangement records for 111,000 accounts. The analysis revealed that this program struggles to successfully address payment issues. Over 75% of payment arrangements are defaulted or canceled (this could reflect an actual default or rolling into a new arrangement). For all accounts that have created at least one payment arrangement, the average number of total Payment Arrangements executed is four, suggesting that payment arrangements are not addressing the underlying cause of nonpayment. Due to the higher bills, 65% of Payment Arrangements are for nonmetered accounts.

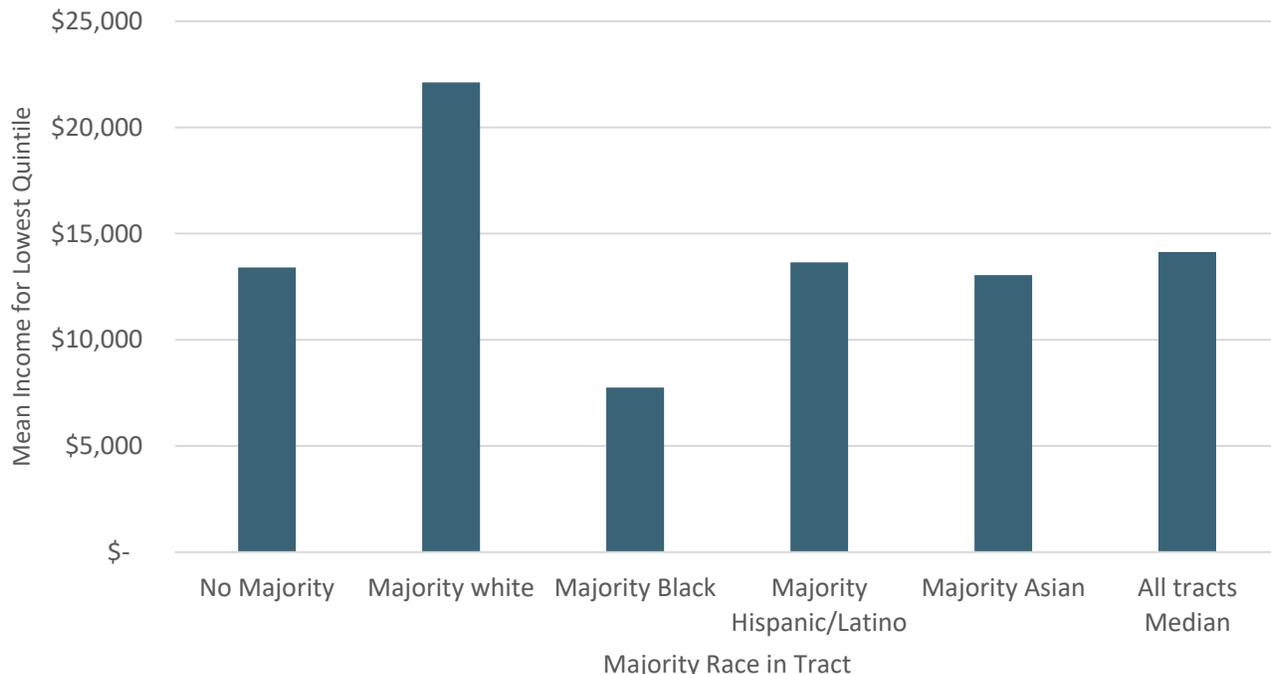
EQUITY IMPACTS

Census data allows us to view water bills through a racial equity lens. While we cannot assign a race to individual bills, we can use tract level data as a proxy—in this case, by designating the majority race living in each census tract—revealing additional patterns in the data.¹¹

For example, we see in Figure 4 that income levels for the lowest income group are different across race, which has a corresponding impact on water bill burden. Tracts where the majority of the population identifies as Black on the Census have the lowest income, followed by majority Asian tracts.

¹¹ It is important to emphasize that the race data from the Census represents residents of that tract. For this analysis, we do not know anything about ownership status of homes, or the distribution of residents within a tract by building type. For example, if a given tract is 40% single family homes and 60% 4-unit homes, and also 40% Asian residents and 40% white residents, we do not know if those residents are proportionally distributed across building types. We also do not know what percent of those residents are renters, the race of the owners of those buildings, or if the owners reside elsewhere.

Figure 4: Income for Lowest Income Quintile by Majority Race in Tract



These income levels are mirrored in the average burdens for each tract group, seen in Table 5 below. Majority Black tracts have the highest burden and the highest average bill total, while majority Hispanic tracts have the highest proportion of nonmetered buildings.¹²

Table 5: Average Water Bill Burden by Majority Race in Tract

Tract Majority by Race	Avg Per-Unit Bill, 2019	Avg Per-Unit Usage Metered (tgal), 2019	Avg Per-Unit Q1-income Burden	Avg Per-Unit Q2-income Burden	% Nonmetered 1-5 Unit Buildings
No majority	\$ 820	56	7%	3%	37%
Majority white	\$ 804	53	4%	2%	36%
Majority Black	\$ 905	62	19%	5%	44%
Majority Hispanic	\$ 899	53	7%	3%	54%
Majority Asian	\$ 728	59	10%	3%	24%

¹² When looking at total counts, the number of nonmetered buildings is about the same in majority Black tracts and majority Hispanic tracts, but overall, there are more accounts in majority Black tracts so the proportion of nonmetered is smaller as compared to majority Hispanic.

Another area where we see differences by race is in water debt. Table 6 shows that tracts that have a majority of Black residents have much larger amounts of unpaid water bills, for both metered and unmetered accounts. Debt in majority Black tracts is more than 10 times that of majority white tracts, regardless of metering status. Because these tracts also have the highest burden, it suggests that water debt, burden, and affordability are all related and cannot be addressed through water efficiency programs alone, or by only addressing water rates.

Table 6: Average Amount Unpaid per Unit, Single Family and 2-5 Unit Buildings, 2019

Majority Race in Tract	Nonmetered Accounts	Metered Accounts
No majority	\$ 168	\$ 46
Majority white	\$ 96	\$ 25
Majority Black	\$ 1,131	\$ 269
Majority Hispanic	\$ 213	\$ 71
Majority Asian	\$ 106	\$ 16

Table 7: Average Penalties, Single Family Buildings, 2019

Majority Race in Tract	% of Accounts Charged a Penalty in 2019	Avg Penalty Charge for those Customers
No majority	29%	\$ 36
White	26%	\$ 30
Black	44%	\$ 121
Hispanic	35%	\$ 50
Asian	20%	\$ 28

Majority Black tracts also receive a disproportionate number of Run Continuous letters, which could reflect building age, deferred maintenance, lack of access to plumbing services, or other factors. This highlights an area of focus for any program attempting to address leaks and infrastructure beyond metering. Payment arrangements are also disproportionately represented in majority Black tracts and are less likely to be completed than in other tracts. Since majority Black tracts present a large area of burden and debt, yet are not completing payment arrangements, this also suggests that payment arrangements as currently structured are not successfully supporting many struggling customers.

Qualitative Analysis – Interviews

The following section outlines the qualitative analysis our team completed. Activities included one-on-one interviews and focus groups in Chicago, Detroit, Philadelphia, and San Antonio. The goal of the interviews was to assess whether affordability programs and policies were achieving the intended result, from a variety of stakeholder perspectives. That is, were utilities able to offer assistance to customers in need without adversely impacting revenues, and were participating customers better able to afford their water bill? This research was critical for understanding the lived experience resulting from current policies and programs. The feedback and lessons learned were vital to identifying what is working, what still needs improvement, and what appropriate steps are needed to strengthen customer assistance programs.

We connected with and heard directly from utility provider representatives, local water advocates, and residential water customers. In addition to interviews with Chicago-based stakeholders, the team conducted interviews and focus groups with a range of stakeholders in municipalities around the U.S., including Detroit, Philadelphia, Portland (Oregon), and San Antonio. Our goal in conducting nationwide research was to hear, learn, and understand what other types of programs and policies might be beneficial and applicable to the City of Chicago and its residents. The list of interviews is in Appendix 5: Utility, Resident, and Water Advocate Interviews.

KEY LEARNINGS FROM RESIDENTIAL RATEPAYER INTERVIEWS

The following is a summary of feedback our team heard from residential focus groups and individual interviews. To ensure that our analysis embodied the ratepayer experience of water affordability programs, our team collectively engaged 24 residential ratepayers and sat in on community listening sessions. Of these, three were Chicago residents currently disconnected or in the process of reconnection to water services (note that fear of repercussions, stress, and accessibility affected our ability to reach and interview more residents). One of the community listening sessions was conducted with the Chicago Water Advocates group.

Perception is a key word to note at the outset. We do not take sides on these issues. Rather, our goal is to pass these stories on as examples of the lived experience for a sample of residential ratepayers.

Conversations revolved around the following discussion topics:

- Why they are having trouble affording their water bill
- Awareness of and experience with affordability programs
- Types of assistance programs that would be helpful
- Eligibility criteria and registration process
- Communications with water utility (both directions)
- Awareness of water usage, understanding the bill, and more

A note about sampling: Time, staff capacity, resident availability, and other constraints prevented us from conducting qualitative research with a representative sample from the target municipalities. We worked through local networks to identify and engage a small group of residents participating in local affordability programs. The results cannot and should not be construed as an illustration of the entire community.

The key takeaways from Chicago interviews are presented first, and the interviews in other cities are grouped as follows: communication, assistance programs, billing, and general.

Chicago Residents

- Interviews indicate that a general literacy gap affects water utility literacy, further compounded by the digital divide. Participants expressed difficulty reading and understanding their water bill and navigating telecommunications systems to enroll and participate in affordability programs.
- We repeatedly heard about the circularity of financial hardship. People are regularly making trade-offs for basic needs (e.g., pay one bill and end up behind on another, buy food rather than pay bills).
- Unfamiliarity with water infrastructure and plumbing fixtures at the site level is a challenge to resolving water affordability issues. Interviewees were unsure if their home had a water meter installed, the location of the water meter, whether they have leaks and how to check for them, and more.
- Interviews also indicate that residents do not perceive they are notified in a timely manner about leaks in their homes. The Run Continuous letters are sent out by mail and may take several days, if not longer, to receive. Some suggested that the City put a real-time alert system in place or make leak alert calls to expedite the information.
- Changes in community composition compound challenges to accessing information. Elder populations once relied on younger residents for assistance (e.g., explaining the bill). Less neighborhood cohesion means people not knowing who to turn to for help. We also heard that there are now fewer precinct captains who serve as community liaisons.

Crisis Intervention and Equity Impacts

While conducting the Chicago resident interviews and engaging with members of the Elevate team piloting water reconnections, we learned more about the intersection of water, health, and human services. Residents voiced that those most in need of water reconnection, affordability, and assistance programs are likely to not come forward because of a history of distrust, lack of customer service, and lack of accessibility to critical information needed to remedy issues experienced with water service. People who are hardest hit by water disconnection, high arrears, and other water challenges mentioned in this report also tend to be those who live in under-resourced areas, who may experience higher rates of unemployment, lower wage jobs, may be more exposed to violence and crime, and are generally left out of institutional-level decision making that has a direct impact on their quality of life.

Repeated failed attempts to receive assistance with water bills or reconnection impacts behaviors and attitudes that can negatively affect mental health and cause psychological fatigue and disengagement from the pursuit of getting help. This can impact residents in a variety of ways—increased stress, poor hygiene and increased exposure to communicable diseases, poor home upkeep, living without other utilities, hoarding, pest control issues, and much more. People are hesitant to receive help because they do not want to be shamed, they do not want to let someone into their home and be embarrassed, and they do not want to be further classified as “other” or “without”.

There are few studies that discuss the mental health challenges that may arise from not having access to drinking water and wastewater services. There is one study that pushes these aspects of the conversation forward: *Water Equity and Security in Detroit’s Water and Sewer District*, a joint publication of the Haas Institute for a Fair and Inclusive Society at UC Berkeley, MOSES, and Praxia Partners.¹³ The section titled ‘The Health Costs

¹³ The Haas Institute for a Fair and Inclusive Society at UC Berkeley, MOSES, and Praxia Partners. [Water Equity and Security in Detroit’s Water and Sewer District](#). January 2019.

of Shutoffs’, discusses the “toxic stress” from water deprivation that compounds on chronic stress that could “be related to experiencing micro-aggressions, persistent unemployment, residential segregation, and subpar educational options,” and the mental and physiological effects on the person. The recommendations section in the Haas report also discusses setting aside funds for crisis intervention as part of the water affordability plan, providing assistance to customers on an as-needed basis.

An equity-centered strategy for improved water service and affordability should address health and human service issues, possibly using and expanding on crisis intervention methods suggested in the above study. The Elevate team has seen cases where homes had to be cleaned out before work could begin due to poor upkeep and hoarding. There may be cases where a crisis counselor and/or other mental health professionals may be needed before people in dire situations can do their part. A holistic, equitable approach should incorporate providing opportunities for residents to recover, build mental resilience, and engage in educational opportunities to learn home utility management practices, in this case, related to home water usage.

Other Cities’ Residents

Communication

- As with Chicago, interviewees in other cities reported that literacy, in general, can be a challenge to understanding the water bill and interacting with the utility. The shift to digital poses a challenge for elders and those with limited digital literacy or access to the internet.
- Lack of communication, education, and transparency leads to distrust. For example, in the Detroit focus group, participants stated that they believed utilities raised rates to cover costs for people and businesses who do not pay their bills. Detroit customers also stated that they heard about rate increases on the news, not from the utility. The focus group in San Antonio felt that industrial users accounted for the largest percentage of water use, and residents are subsidizing them.
- A lack of awareness of assistance programs is one of the main impediments to participation. A Detroit resident who had their water shut off stated that no one informed them about a program that could help them get water service reinstated and specifically implied that someone should have proactively contacted them.
- Among others in the Detroit focus group, one had never heard of the program while others had, and, among this latter group, some did not apply because they assumed they would not qualify. Stringent eligibility requirements were also a barrier to application.
- In the San Antonio focus group, the majority had never heard about the water affordability program (i.e., Uplift).

Assistance Programs

- Some participants stated that payment arrangements are not preferred. They feel it is difficult to honor the agreement and too easy to get kicked off. They did not feel this is a good way to address arrears.
- We heard repeated objections to the reactive nature of any type of assistance program. Why, they asked, is it necessary to wait until they are experiencing financial hardship before receiving assistance? They expressed an interest in more hands-on support for managing balance before it becomes a problem.

Billing

- All the billing-related feedback is closely associated with the communications-related comments, such as issues connected to literacy, the digital divide, and general distrust. We heard specific and repeated requests for billing education; people want to understand bills and breakdown of charges. They also asked for less complicated and more streamlined bills.
- Connected to that, when rates or fees change, they want to know why.
- The Detroit focus group felt the utility should consider that customers have other bills and need to provide food for families. Accordingly, they felt income is not a suitable indicator. Rather, all household costs should be factors in determining eligibility for assistance programs, discounted rates, fee/principal forgiveness, and more. This focus group also said it would be helpful to include all utilities on a single bill to assist with budgeting.

General

- When asked whether they pay attention to water usage, a Detroit resident said no. They use water for everyday chores, including showers/baths, washing dishes, cleaning house, doing laundry, and other miscellaneous things. They felt that water is a part of daily life for them and their family, and their current consumption reflects the minimum amount necessary.
- In San Antonio, we heard a desire for the utility to be more proactive about addressing issues which are out of residents' control, such as leaking pipes and other aging infrastructure. Old and inefficient water fixtures and appliances were included in this list. Some of these issues are out of residents' control while, for others, they simply do not know how, or cannot afford, to fix them. They want the utility to offer this type of assistance and be proactive about contacting water customers.
- This same sentiment extends to renters who have a high water bill owing to leaking pipes or inefficient fixtures.¹⁴

KEY LEARNINGS FROM UTILITY PROVIDER INTERVIEWS

Interviews were conducted with the City of Chicago Department of Finance, the Community and Economic Development Association (CEDA), who together administer the Utility Billing Relief program. Interviews were also conducted with water utility representatives from Detroit, Philadelphia, and San Antonio. Conversations were tailored to each utility—based on what types of programs they offer or policies they have in place—but, essentially, interviews revolved around the following discussion topics:

- Identification of utility goals and whether they were being achieved
- Impacts to revenue, such as the ability to keep up with operation, maintenance, and repair programs after implementing affordability-focused programs and policies
- Lessons learned and, relatedly, what changes were necessary

¹⁴ Note, in San Antonio, landlords are responsible for water bills and for fixing plumbing problems. The utility discussed extending their plumbing assistance program (Plumbers to People) to renters and whether that would inadvertently reward landlords who do not fix plumbing problems on their properties. For now, it is not available to renters.

The following summary begins with goals, first from Chicago followed by what we heard from water utilities in other cities.

Chicago Interviews

In our interviews with Department of Finance staff from the City of Chicago and the Community and Economic Development Association of Cook County, Inc. (CEDA), discussion topics included the goals and progress to-date of the Utility Billing Relief (UBR) program, as well as a historical perspective of the water rates and charges. Here is what we heard:

- A City employee told us the collection of residential water charges are generally greater around 90%, owing to a robust collections strategy which includes penalties, reminder notices, referrals to outside law firms, and, as a final recourse, property transfer which could generate a full payment certificate.
- Mayor Lightfoot suspended water shutoff postings for nonpayment in May 2019. The moratorium provided the City an opportunity to consider alternatives, including ways to help people. This led to the creation of the Utility Billing Relief (UBR) program, which has two key components: To give people access to water and to give them the ability to come into compliance.
- A priority of the Lightfoot Administration is to make sure everyone has access to water that is affordable. There is a cost to providing water service, but the goal is not to collect revenue. Rather, the goal is to pay for the services that are provided to the citizens of Chicago and achieve a balanced budget.
- We learned during the interviews that the original goal of the UBR program was to provide assistance to low-income water and sewer customers. At the same time, the City needs to fund the water system, which is solely dependent on revenue from water and sewer fees. Declining revenue over recent years has made it difficult to do utility upgrades and maintenance. Therefore, a major consideration was how to provide assistance “without breaking the bank.” Given the number of people who were in arrears or not paying at all, the assumption made at the outset was that UBR would be a revenue neutral program, however, there was no sure way of knowing what the overall impact on revenue would be.
- In conversations with the Mayor’s Office, we heard that increasing water rates resulted in a lot of “auxiliary impacts,” specifically, that customers were getting behind on bills and accruing high levels of debt. The UBR program aims to achieve a “win-win situation,” whereby customers can afford their utility bills and the City receives revenue to continue running the utility.
- Regarding rate increases in the early 2010s, we heard that the City was “trying to play catch up.” Compared to other large Midwest cities, the rates were low and insufficient to cover the cost of pipe replacement and other needs.
- In speaking with staff from CEDA about the UBR program, we heard the following:
 - CEDA staff is pleased with the number of applicants to-date and is willing and ready to implement more extensive outreach to City of Chicago residents. This could include a robust communications campaign that involves additional mailings, more frequent online webinars in multiple languages, and use of its Ambassadors Program to help engage with potential applicants on-the-ground.
 - CEDA staff is also pleased with how the partnership with the City of Chicago is operating, and how the team was able to rollout both a long-form and short-form application that mirrors current LIHEAP application requirements for a more streamlined process for applicants.
 - Evaluation of the UBR program was not possible at this time due to applicants being enrolled for less than one year.

Other Utility Interviews

Detroit Water and Sewerage Department (DWSD)

The City of Detroit's assistance program is called the Water Residential Assistance Program (WRAP). This provides a \$25 credit toward monthly bills for 12 months, freezes the past due balance, and applies up to \$350 credit toward past due balance after the first month and again after 12 months of enrollment. This totals \$1,000 of assistance. It also offers up to \$1,500 for minor plumbing repairs. When the program was designed the average bill was approximately \$700 to \$1,000.

Philadelphia Water Department

Philadelphia's Tiered Assistance Program (TAP) has been in place since July 2017. TAP is a fixed rate paid monthly, and any unpaid balance is suspended. Once a customer makes 24 payments on their TAP-approved amount, all penalties are waived. As of October 30, 2020, there are 22,884 TAP participants, and approximately 26% of participants have received penalty forgiveness. From inception to November 2020, total penalty forgiveness totaled \$3,046,518.88. In September 2020, the program was updated for principal balance forgiveness. In November 2020, the total dollar value of principal forgiveness was estimated to be over \$38 million if all current enrollees make the 24 payments. Given these high dollar values, we asked a Philadelphia employee whether there is a risk of the utility experiencing a revenue deficit. They replied, "No. [...] More than likely, we would have never been paid for those balances anyway. We are talking about customers who have a lot of debt. They probably would have never paid that off unless the property was sold."

San Antonio Water System

The San Antonio Water System (SAWS) is a quasi-public agency with a CEO and executive management team structured like a private company. The mayor sits on their Board of Directors, and other Board members are appointed by City Council. They cannot raise rates without City Council approving the rate structure.

SAWS operates the Affordability Discount Program (ADP) for customers at or above 125% Federal Poverty Level. ADP provides a monthly bill discount ranging from about \$4 to \$25. An employee told us the goal is "to get revenue back in the system that we were losing." SAWS wrapped multiple assistance programs into one holistic program called Uplift, and they try to determine the reason for a customer being in arrears and offer the right type of assistance. "We look at a customer who owes \$3,000 and ask why they are \$3,000 behind. If we find out they're \$3,000 behind because they just don't want to pay a bill that's different than someone who is \$3,000 behind because they have leaks," one employee said. In addition to ADP, Uplift offers payment arrangements, connects customers with local assistance agencies, cancels charges related to leaks once repaired by a licensed plumber, waives late fees for seniors, offers payment extension to customers receiving disability income, and more. They also offer programs to repair household plumbing and sewer laterals, called Plumbers to People and Laterals to People, respectively.

Recommendations

The following section outlines recommendations based on the quantitative and qualitative analysis conducted, for the consideration of City of Chicago in addressing the evolving issues of water affordability and to rebuild public trust within this context. Recommendations are categorized into the following focus areas:

- 1 Water Bill Burden and Debt
- 2 Customer Service and Outreach
- 3 Water Shutoffs and Residential Leakage/Plumbing
- 4 Water Rates, Fees, and Taxes
- 5 Operations and Data Management
- 6 Mission, Leadership, and Public Engagement

Where applicable, each set of topical recommendations are followed by a set of Promising Practices, brief references to how some of the recommendations have been successfully rolled-out in other cities throughout the U.S., or a lesson learned. These examples are sources from our qualitative analysis, and from secondary research methods which include a reference note.

Addressing Equity

The data analysis acutely highlights the overwhelming issue of racial inequities tied to water service and affordability. For this reason, all following recommendations were created within the underlying context of addressing equity in tandem with addressing water affordability.

1 Water Bill Burden and Debt

1.1 Implement universal metering for all residential accounts in the City of Chicago, with an understanding that lead service lines must be addressed concurrently. Universal metering would allow the City to more accurately manage, measure, and bill customer accounts, and improve affordability for customers. It also allows the City to track overall performance and use of its drinking water infrastructure system. Additionally, there is a clear racial equity issue related to who is metered and who is not. A significant majority of Black, Hispanic, and Asian residents do not have metered accounts, and nonmetered accounts often have a higher estimated bill that is not based on actual usage.

1.1.1 Reinstate the MeterSave Program. While solutions for universal metering are being thoughtfully considered, reinstating the voluntary MeterSave program alongside lead service line replacement supports the goal of universal metering. The program was paused in June 2019 due to concerns over potential increases in lead levels, and a study is being conducted to alleviate issues related to lead. According to the City of Chicago Department of Water Management (DWM), most customers who had a meter installed saw on average a 50% reduction in water billing. Based on the quantitative research presented in this report, it is evident that metered customers are paying substantially less on their water bills compared to nonmetered customers.

Utility Billing Relief (UBR) Program Recommendations (1.2 to 1.5):

1.2 Conduct a thorough evaluation of the UBR program to determine success and needed improvements and communicate those findings with water advocates and the public. Per CEDA, at the time of this report there are more than 7,400 enrolled participants in the UBR program. However, the scale of debt is much larger than the accounts currently enrolled in the program. A thorough program and communication evaluation should be conducted to understand impact at the household level, and what should be improved to increase enrollment and debt reduction.

1.3 Implement UBR program satisfaction surveys 12 months after participant graduation to understand program impacts. Surveying customers is an opportunity to better understand how the program is working for residents, to recognize reasons why customers might still be struggling to afford their water bills, and to identify potential program improvements. As mentioned, those struggling to afford water service are likely dealing with other debt and financial struggles (e.g., other utility costs, medical costs). Having a better picture of overall issues facing a resident provides insight into how to provide holistic solutions. It is also a good idea to provide an incentive for completing the full survey such as a discount on their next water bill or a gift card.

1.4 Expand on the robust UBR enrollment campaign. CEDA is interested in conducting a more robust enrollment campaign, from traditional promotional tools (e.g., website and flyers) to better visibility for their Ambassadors. The City should consider how to engage and support increased enrollment utilizing CEDA's networks and resources, including interacting with other agencies such as the Citizen's Utility Board to spread the word.

1.5 Expand the UBR program to include more residents in need of assistance (expand income eligibility, include renters and 3-4 unit buildings) and reach out to customers experiencing especially high bills for emergency plumbing assistance. Water bill burden is not only about the size of a bill; it also relates to household income and can be used as an indicator of a person's access to resources for responding to an emergency. Many multi-tenant buildings have customers struggling with affordability challenges. The City should consider a multi-faceted approach:

- 1.5.1** Expand UBR to include renters if they can be identified as the water bill payor. In single family homes, sometimes the owner may share or transfer the water billing account with the tenant. If this is occurring in any unit size or type, the renter should be eligible to enroll in UBR if they meet the income requirements, have a water billing account, and pay the water bill for the building at which they live.
- 1.5.2** Revise UBR to include 2-unit buildings that are not owner occupied. Owner-occupied 2-unit buildings are currently eligible for the program.
- 1.5.3** Revise UBR to include 3–4-unit buildings that are owner-occupied, and rental units if tenants can verify that they are paying the water bill at the building of residence. Like 2-unit buildings, the 3-4 unit buildings also need a pathway for improving affordability.
- 1.5.4** Consider deeper bill discounts for the lowest income UBR program participants. For example, residents at 30% AMI may only be able to pay 25% of their water bill.

1.6 Enhance enrollment and outreach efforts for State and City water bill assistance programs that target renters who are not eligible for an expanded version of UBR. For renters who are not eligible for an expanded UBR program as described above, the City can enhance enrollment and outreach efforts alongside the State of Illinois with programs like LIHWAP to provide direct water utility assistance to renters. The City may also consider expanding City of Chicago programs like the Department of Housing's Emergency Rental Assistance Program, which covers rent and gas/electric utilities, to also cover water utilities for renters and homeowners impacted by COVID-19.

1.7 Review and improve the Payment Arrangements program considering models that provide more flexible payment options as allowable. Based on the analysis conducted, there is a low rate of performance for residents enrolled in a payment arrangement program. More than 75% of payment arrangements are defaulted or canceled (which could reflect an actual default or rolling into a new arrangement). Given the water bill burden facing many residents, debt appears to be a primary reason payment arrangements fail. Consider debt forgiveness (similar to the UBR program) for accounts over a certain amount. This could be implemented when a meter and lead service line (if applicable) are installed. A budget billing program would also be appropriate to consider.

1.8 Closely monitor developments with COVID economic relief funding to support City efforts to help residents struggling to pay their water bills. We elaborate on this in the section Addressing Costs: COVID Relief Funds.

Promising Practices

One Application, Multiple Programs

Detroit developed a one application, multiple programs eligibility model. Similarly, San Antonio has only one Customer Assistant Application Program with a Unified Customer Assistant Application, from which the customer is matched to the best program. Philadelphia also has an application like this, where the utility selects the best program based on income.

Senior Owner-Occupant Discounts

Boston offers a discount of up to 30% on water-only charges for owner-occupant customers age 65 and older who live in residential buildings of one to four units; Boston also offers discounts to low income disabled property owners.

Reference: NEIU Water Affordability Report: "[A Drop in the Bucket: Water Affordability Policies in Twelve Massachusetts Communities.](#)"

2 Customer Service and Outreach

2.1 Continue to move customers to a monthly billing cycle. All accounts—whether metered or nonmetered—should be on a monthly billing cycle. This allows customers a smaller, regular monthly bill, which is often easier to plan for, budget, and pay. Monthly billing also enables the utility to send out regular correspondence such as bill inserts and messages about beneficial tips for conserving water, fixing leaks, information about affordability options, and the latest news on infrastructure improvements.

2.2 Review the existing bill format and redesign it to be easily understood in multiple languages.

2.3 Invest in building a relationship with residents through public meetings, improved communications, and partnerships. Host regular community meetings in Chicago Wards to get the word out about programs, payment options, water quality, and any upcoming rate changes. Promote these meetings and invite anyone who has contacted the water department in the past few years. Partner with community groups and advocates, and work with local Ward offices, community organizations, 311 operators, and the media (e.g., WGN and Univision) to help improve relations, build trust, and share information about opportunities for customers. Have guidance documents and language prepared for neighborhood partners about new programs, including important updates for residents. Share as much data online as possible (whether it is about the new mission statement and customer-focused service, upcoming meetings, new programs, water quality reporting, and more). Finally, ensure public communications are available in multiple languages based on the demographics of residents.

2.4 Continue to be transparent about available bill assistance opportunities (including opportunities beyond water relief). Those struggling to pay their water bill likely have additional utility bills they are having difficulty affording. The City of Chicago’s website should have a single, regularly updated webpage listing all the various programs, resources, and contacts (along with appropriate weblinks) available to assist residents in paying utility bills. Assistance information should also be included as a water bill insert on a semi-regular basis. It is important that residents know about all assistance opportunities before they have difficulty paying a bill.

2.5 Move toward a universal application for all affordability assistance programs. As noted in the findings, residents who struggle to afford their water bill are also often struggling to afford other necessities and utility services. There is a need to address the holistic nature of affordability for low-income customers. Assistance programs could include UBR, LIHEAP, SNAP, and others, and could have one universal application reducing the burden on those residents already facing challenges. Another consideration is to set up programs to be opt-out instead of opt-in for those residents already identified as having affordability challenges.

Promising Practices

Town Hall Meetings
DC Water has hosted town hall meetings in each ward of the city in a place selected by the council member of that ward. The meetings were attended by the head of the water department as well as key staff.
Community Relations
Philadelphia does its own community relations, and said one-on-one interactions work best. Hearing something from a person is more effective than putting something on a bill or in a bill insert. Per the utility, “Bill stuffers are great if they are colorful, but, again, you have to get the customers to open the bill. Our bills come in blue envelopes. As soon as they see the blue envelope, they know it’s the water bill [and say,] ‘I know what it is, I don’t have to open it.’”
Language
The way a message is communicated is also important. San Antonio’s utility identified a stigma among customers who are on an affordability program. The utility began using the terms “uplift” and “neighbors” rather than utility-centric words like “affordability program” and “customers.”
Marketing
Assistance programs in the cities we interviewed were marketed in a variety of ways: bill stuffers, posters in transportation hubs, posters on buses and subways, TV and radio advertisements, newspaper advertisements, billboards, and door hangers. Many also give presentations at community meetings, resource fairs, and more, especially when the program was being rolled out.
External Affairs
San Antonio Water System has a team of seven to eight staff members for the water affordability program and purposely moved them out of their customer service department. As opposed to call centers, they have an external affairs department that goes out in the community to sign people up. A utility employee told us, “I try to encourage my colleagues to think about a new paradigm and the way you do programming. Take the burden off of the customer because that will make them more willing to sign up. [...] Don’t wait for them to come to you.”

3 Water Shutoffs and Residential Leakage/Plumbing

3.1 Continue the moratorium on water shutoffs and the moratorium on shutoff postings for nonpayment.

Continue moratoriums, especially for those residents struggling to pay their water bill or experiencing a hardship.

3.2 Continue to reinstate service for households that have been disconnected, and, building off the current pilot, launch an established plumbing repair program to help low-income households address leaks, emergency plumbing issues, broken faucets and toilets, and more.

The City of Chicago, in partnership with Elevate, has successfully reconnected water in homes in Chicago and continues to do so. As the program evolves, considerations about payment for services should be discussed, such as having income requirements for those receiving program services, avoiding customer reimbursement models as much as possible, and program longevity and sustainability in parallel with other City efforts on water affordability. A holistic program for reconnection could include service reconnection, debt forgiveness, metering (if not already metered) in conjunction with a lead service line replacement (if applicable), plumbing repairs (see below recommendation), and enrollment in the UBR program (if eligible).

3.3 Due to the case management needs of some customers, partner with Chicago Department of Family & Support Services (DFSS) or other agencies and nonprofits in the mental or public health sector, to assist customers experiencing long-term water shutoffs as part of the leak repair program.

For particular cases, it may be necessary to take crisis intervention measures before the resident can have the water reconnection fully resolved. Some residents may need counseling services, and even home cleaning services, to be able to access the water infrastructure in their homes. Not having water is a hypersensitive issue for every individual, which can be exacerbated if their lived experience has consisted of chronic stressors. The longer water deprivation persists on top of everyday struggles, the more there is a need for attention and support beyond only water reconnection.

3.4 Issue leak alert or spike in use notices via text and email, and more frequently than once a month.

Leak alert systems have been successfully implemented in DC, San Francisco, and the City of Evanston. This system allows residents to become aware of and plan to address leaks in a shorter timeframe as opposed to knowing only after receiving a Run Continuous notice in the mail. As evidenced in the quantitative section of this report, there are more Run Continuous letters issued to buildings in low-income tracts. Implementing a leak alert system may allow for a touchpoint to update customer information and increase customer responsiveness to addressing leaks. To provide more frequent notification than once per month, the City should consider replacing the current mobile water meter read system with an Automatic Meter Reading (AMR) system, similar in technological capability to what has been deployed by electric utilities.

Promising Practices

<p>Youth Workforce Development</p>
<p>The Mile High Youth Conservation Corps out of Denver, CO trains youth ages 17-24 to conduct basic water and energy retrofits in low-income homes and nonprofit organizations. The program results in over \$500 in annual savings for customers and has saved 476+ million gallons of water since its inception. The program relies on a mix of grants and utility partnerships to provide its services. By training and engaging youth, this approach can also help build a more diverse workforce pipeline in the water industry.</p>
<p>Direct Install for Water Efficiency</p>
<p>Project Home and the Madison, WI water utility have teamed up to provide low-to-moderate income homeowners with high efficiency toilets, leak repair detection and upgrades, and low flow showerheads and aerators. To date, the program has saved customers more than a half billion gallons of water and \$2.6 million in water and sewer charges</p>
<p>Connecting Residents to Plumbing Services</p>
<p>The San Antonio Water System’s Plumbers to People program was launched in 1994 as a way to break the cycle of rising water bills for low-income customers. The program sends an approved plumber to the customer who then fixes bathroom, kitchen, water heater, water line, hose bib, and slab leaks. The average annual water savings of the program is 59,000 gallons per year.</p>
<p>Assistance for Home Plumbing Repairs</p>
<p>WRAP in Detroit includes assistance for finding and fixing leaks. We asked Detroit what changes customers see in their bills after plumbing repairs and were told by Tiffany Jones, Public Affairs Director, that “minor home plumbing repairs performed through WRAP resulted in an average bill reduction up to 30%. We found that replacing older toilets is the number one water savings for an individual. One example is a senior with three family members in the home who had an average monthly bill of \$210. After WRAP financial assistance to pay down her past due balance and following plumbing repairs, including replacing older toilets, her bill is now averaging \$63 per month.”</p>
<p>Evanston: Water Smart Program</p>
<p>Evanston allows customers to sign up for notifications through its Water Smart program. For example, if customers have a leak, they will receive a notification from the Water Smart software that there is a spike in usage and contact the customer. If a customer cannot identify the source of the leak, the city will dispatch Public Works staff to help customers identify leakage issues. (They do not fix anything, but they help identify leaks. This service is offered free of charge.) This allows customers to find and fix the leak within a matter of days rather than waiting until they receive a significantly higher bill at the next cycle. If the affected resident can show that it’s fixed, then the City of Evanston will forgive the high bill. The Water Smart software has a library of videos on how to save and conserve water, which are also promoted via social media.</p>

4 Water Rates, Fees, and Taxes

- 4.1 Review, update, and communicate to customers about billing and collection policies.** The City of Chicago should review its billing and collections policies to ensure residents are being provided with options to pay smaller and more frequent bills. Practices that can help residents with easier payment options include budget billing, issuing more frequent bills (e.g., monthly), and the ability to adjust payment dates.
- 4.2 Conduct an updated cost of service study and explore what an alternative, affordable water rate structure could look like in the future for retail customers (residents and businesses) in the City of Chicago.** This would set the City up for an improved, more transparent water/sewer affordable rate process (also once 100% metered) to rethink current water rates and structure (e.g., a flat rate versus inclining rate based off usage, affordable rates, or income based-rates). Note: any future rate changes should be transparent, and the public should be invited to learn and participate during such processes. Additionally, consider working with a water rate expert to explore potential rate options and/or fee changes that could help residents struggling with their water bills.
- 4.3 Further research on how sewer rates, garbage fees, and various taxes could be altered to make water utility bills more affordable.** Some examples for reducing costs for low-income residents could include a flat, capped, or reduced sewer charge; reducing the tax charges; and waiving penalty fees or taxes charged on account debt. Additionally, consider implementing budget billing, similar to the energy sector, to assist residents with monthly expenses. The predictability helps customers budget and stay on top of their bill.
- 4.4 Formulate a new calculation for taxes on nonmetered bills in the interim given that lead service line replacement and meter installs will likely take many years.** Nonmetered customers tend to pay more for water than metered customers, which means they may proportionally pay more tax. While the goal is fully metered buildings across the entire City, it may be worth considering a lower tax rate for nonmetered accounts in the meantime. This is meant to be a longer-term consideration, which would require a thorough examination of current processes/equations and exploring feasible scenarios.

5 Operations and Data Management

5.1 Streamline all databases to improve communications with residents. Data management and accuracy tend to reflect the priorities of the user—in this case, the City of Chicago. Focusing on customer needs influences how data is managed. For example, prioritize having a system that tracks where residential water service has been shutoff. Likewise, a robust, customer-centric database would allow for more personal notifications such as a text message to customers when either a bill, or the number of leak alerts or payment arrangements, go over a certain amount.

5.2 Continue to foster inter- and intradepartmental dialogue to support staff and encourage innovation. In addition to a central database shared between departments requiring access, there should be regular communication and coordination between City departments to improve all aspects of program efficacy. For example, Philadelphia utility leaders who administer the Tiered Assistance Program (TAP) have regular cross-departmental check-ins because TAP is a continuous improvement model that requires integrated dialogue.

5.3 Ask/survey staff on ways to improve operations, programs, and communications with residents. Engage and dialogue with employees already working in the field through strategy meetings and surveys to identify great ideas—from how to address affordability and improve customer assistance to how to enhance operations and improve staff morale.

5.4 Continue to partner with research institutions for UBR evaluation, other water program pilots, and correlating evaluations. Partnering with local academic institutions and organizations on research initiatives and pilots helps instill a culture of innovation, builds good will, and may produce more robust solutions that can only be identified within an interdisciplinary environment of cooperation. The City of Chicago should continue to build these relationships and initiatives to support its water management, infrastructure, and customer service.

6 Mission, Leadership, and Public Engagement

6.1 Amplify the Department of Water Management mission statement that guides and publicizes the City of Chicago's (and other appropriate departments') commitment to providing safe, affordable water and excellent customer service. It is essential to initiate a mission that adopts a safe, reliable, efficient, affordable, transparent, respectful, and environmentally responsible approach to water management for all Chicago residents. The mission statement could be developed and vetted in partnership with key community leaders to demonstrate the City's commitment and investment in people and the community. Incorporating community input in the mission statement development process is also a way to build trust.

6.2 Develop an overarching water affordability plan for the City of Chicago. A water affordability *plan* is not the same as any single water affordability *program, policy, rate, or rate structure*. A water affordability plan outlines the context and values, guiding principles, and strategies for how the City of Chicago will tackle water affordability for its residents. The planning process should have holistic and diverse stakeholder engagement including community members, water advocates, industry experts, and many more. The plan should include foundational values of public trust, public health, equity, customer service, and water as a public good. An affordability plan should address equitable solutions for: past consumer debt, continuous improvement in customer service, water shutoffs, rates, leakage in homes, and water bill burden while also allowing the department to uphold its fiduciary duty of maintaining critical water and sewer infrastructure citywide.

6.3 Build a water career pipeline for youth and adults with a key focus on equity, diversity, and inclusion. Skilled workers are needed to build, maintain, and operate our water infrastructure. As utilities and the companies that support them prepare for a wave of retiring workers, there is an opportunity to develop an equitable pipeline of new workers. Implement clear goals for diversity, equity, and inclusion in hiring, decision making, program and policy design, employee recruitment and retention, and stakeholder engagement. Internal and external continuity in these practices can signal a more resilient workplace environment and strong industry leadership. The City of Chicago could partner with schools, universities, water industry organizations, regional firms, and labor unions to help develop a region-wide career pipeline for both youth and adults. Particular attention could be given to creating a pre-apprenticeship training for individuals with little experience and barriers to employment, such as returning citizens.

6.4 Strengthen external messaging to communities by deploying a community engagement plan that involves and elicits feedback from residents in a culturally appropriate way. Water utility leadership should strengthen their communications networks with community leaders and residents. There should be a scan of available Department of Water Management staff who may have capacity to lead these efforts, and how that capacity can be supported by other City departments (e.g., Office of Community Engagement) in order to develop effective engagement strategies and tactics. Activities could include listening sessions, exploring avenues for new programs and initiatives, and getting community feedback about existing programs and services. It is important that these communications consider culturally appropriate approaches and priorities as they engage communities and residents.

Promising Practices

Organizational Culture

Cathy Bernardino Bailey, the current Executive Director of Greater Cincinnati Water Works (GCWW), is forthright in communicating to the 600 GCWW staff that they are of the community they serve and to adopt this tense when tackling water challenges for their 1.1 million customers. In an interview, Bernardino states: “I often tell employees that we are the community. In past practices, we’d come up with a solution we needed, and then we’d just put it out there. And our belief was, “It’s what we’re doing, and if they can get with it, they can, but if they can’t, it’s their problem.” What I’m saying now is that it’s not “their problem” because we are the community. So, if the community has a problem, then we have a problem.”

Reference: <https://www.womenofcincy.org/home/cathy-bailey>

Mission, Vision, and Branding

[DC Water](https://www.dewater.com/), the regional water and wastewater utility for the Washington, DC area, has led several initiatives that support developing a mission, demonstrating leadership, and engaging in robust public engagement. Examples include:

- Establishing a mission, vision, and values for its operations that is public for the community.
- Rebranding itself by hosting a public call for new logos. The logo competition engaged customers on a fundamental level and allowed them to connect with their water utility.

Reference: <https://www.dewater.com/who-we-are>

Workforce Development

The Louisville/Jefferson County Metropolitan Sewer District (MSD) created a Community Benefits Program as a result of a disparity study completed in 2018. This program leverages capital investments in water infrastructure to benefit ratepayers through workforce development, education, and economic development. The program provides specific opportunities in training and apprenticeship programs, small business outreach and mentorship, as well as exposing youth to careers in the water sector. The goal is to achieve more equity in the workforce.

Reference: <https://louisvillemsd.org/doing-business-us/community-benefits>.

Addressing Costs: COVID Relief Funds

The City of Chicago has made considerable efforts to address water service and affordability issues, including having a keen awareness of funds available through state and federal sources to address rising costs in water service and infrastructure. In addition to the many well-known funding sources, such as the U.S. EPA and State Revolving Loan Fund, we recommend that the City closely monitor COVID relief funding that can be used to address challenges of affordability.

In December 2020, Congress passed the Consolidated Appropriations Act, 2021 (CAA) providing omnibus spending and COVID-19 relief funding. Within the bill is a \$638 million appropriation toward a new program that will help low-income families cover their water bills. The program is now called the Low-Income Household Water Assistance Program (LIHWAP) and is administered by the U.S. Department of Health and Human Services. The program provides grants to states and tribes, which in turn provides funds to owners and operators of public water utilities. In March 2021, the American Rescue Plan Act (ARPA) was passed, adding \$500 million in additional funding to LIHWAP. The CAA also provides \$25 billion for the Emergency Rental Assistance Program (ERA). This program is designed to help renters address arrearages on their rent and, if the local government permits, their utility bills as well. ARPA added another \$21.6 billion in funding to expand the impact of the program in the wake of the current rental housing crises during the pandemic.¹⁵

The City of Chicago should understand how and when any COVID relief funding will be provided via the State of Illinois or Cook County and prepare data to inform how to target the funds toward low-income residents significantly struggling with water debt. All of the information here and more, is concisely explained in a [fact sheet](#) published by the National Consumer Law Center and the Natural Resources Defense Council.

¹⁵ National Consumer Law Center and Natural Resources Defense Council. [Fact Sheet on Recent Federal COVID-19 Relief Funding to Help Customers with Water and Sewer Bills](#). April 2021.

Conclusion

Water affordability is a complex, intersectional challenge that will require a City-wide, customer-centric, equity-based approach for providing all residents with access to clean drinking water and wastewater services. The goal of this quantitative and qualitative analysis was to provide tailored policy and program recommendations to the City of Chicago on how it can equitably address issues related to water affordability, bill burden, shutoffs, plumbing issues, data management, and customer service.

The research shows water bill burden exists throughout the City, though it is not distributed evenly. Those households in the lowest income quintile, on average, are well over any accepted threshold of “affordability.” This includes not only single-family households, but multifamily buildings, which analyses show have the highest average water bill burden, highest rates of nonpayment, and increases of debt over time. In fact, water bill debt carries significant weight with unpaid balances accruing over time and payment arrangements being mostly insufficient to address the issue. We recognize the City of Chicago for rolling out the UBR program to address affordability and debt issues, and we strongly encourage providing similar relief to multifamily buildings (renters and owners) and households.

This analysis also shows nonmetered customers face more affordability challenges than metered customers—these challenges include higher water bill burden, total bill amounts, and outstanding debt. Water bill burden in the City is also a racial equity issue, with accounts in majority Black, Hispanic, and Asian populated tracts less likely to be metered, more likely to have leaks, and facing higher water bill burden while using comparatively less water than accounts in majority white (non-Hispanic) tracts.

The analysis and interviews we conducted highlight the holistic nature of affordability. Residents who struggle to afford their water bill are also often struggling to afford other necessities and are forced to make trade-offs to pay for basic needs. Literacy, the digital divide, and community composition have made it more difficult to access information, especially among older residents, and difficulty reading and understanding the water bill (and all the items on it) leads to distrust. Additionally, a lack of familiarity with water infrastructure and fixtures at the site level is a challenge to resolving issues such as leaks, plumbing, or metering.

The recommendations outlined in this report are designed to help address these water affordability issues as well as improve relations between the City, its departments, and residents. Our team welcomes the opportunity to continue to partner on additional research and implementation of viable solutions to solving the critical issue of water affordability. We commend the City of Chicago in proactively addressing these systemic issues to provide safe, affordable, and equitable water service to Chicagoans.

Appendices

Appendix 1: Water Bill Burden by Community Area

Community Area Number	Comm Area Name	Median Burden per Unit Q1-income level		Median Annual Bill per Unit	
		Nonmetered	Metered	Nonmetered	Metered
14	Albany Park	7%	4%	\$ 1,170	\$ 551
57	Archer Heights	7%	4%	\$ 1,151	\$ 558
34	Armour Square	16%	9%	\$ 1,010	\$ 556
70	Ashburn	7%	3%	\$ 1,369	\$ 574
71	Auburn Gresham	17%	7%	\$ 1,198	\$ 486
25	Austin	14%	6%	\$ 1,214	\$ 518
45	Avalon Park	13%	5%	\$ 1,151	\$ 462
21	Avondale	8%	3%	\$ 1,163	\$ 479
19	Belmont Cragin	8%	4%	\$ 1,173	\$ 587
72	Beverly	4%	2%	\$ 1,398	\$ 571
60	Bridgeport	9%	4%	\$ 1,021	\$ 505
58	Brighton Park	9%	4%	\$ 1,148	\$ 528
47	Burnside	14%	6%	\$ 1,171	\$ 486
48	Calumet Heights	9%	4%	\$ 1,137	\$ 448
44	Chatham	15%	7%	\$ 1,176	\$ 500
66	Chicago Lawn	12%	6%	\$ 1,165	\$ 554
64	Clearing	6%	3%	\$ 1,137	\$ 523
35	Douglas	13%	6%	\$ 1,163	\$ 467
17	Dunning	7%	3%	\$ 1,137	\$ 543
27	East Garfield Park	30%	13%	\$ 1,177	\$ 495
52	East Side	9%	4%	\$ 1,198	\$ 523
77	Edgewater	7%	3%	\$ 1,270	\$ 497
9	Edison Park	5%	2%	\$ 1,244	\$ 574
68	Englewood	32%	13%	\$ 1,266	\$ 472
12	Forest Glen	6%	3%	\$ 1,359	\$ 579
37	Fuller Park	18%	7%	\$ 1,161	\$ 464
63	Gage Park	8%	4%	\$ 1,157	\$ 585
56	Garfield Ridge	6%	3%	\$ 1,137	\$ 532
38	Grand Boulevard	17%	7%	\$ 1,164	\$ 503
69	Greater Grand Crossing	23%	10%	\$ 1,251	\$ 490
55	Hegewisch	11%	5%	\$ 1,208	\$ 484
20	Hermosa	10%	5%	\$ 1,163	\$ 571
23	Humboldt Park	16%	7%	\$ 1,163	\$ 511

City of Chicago Water Affordability Report

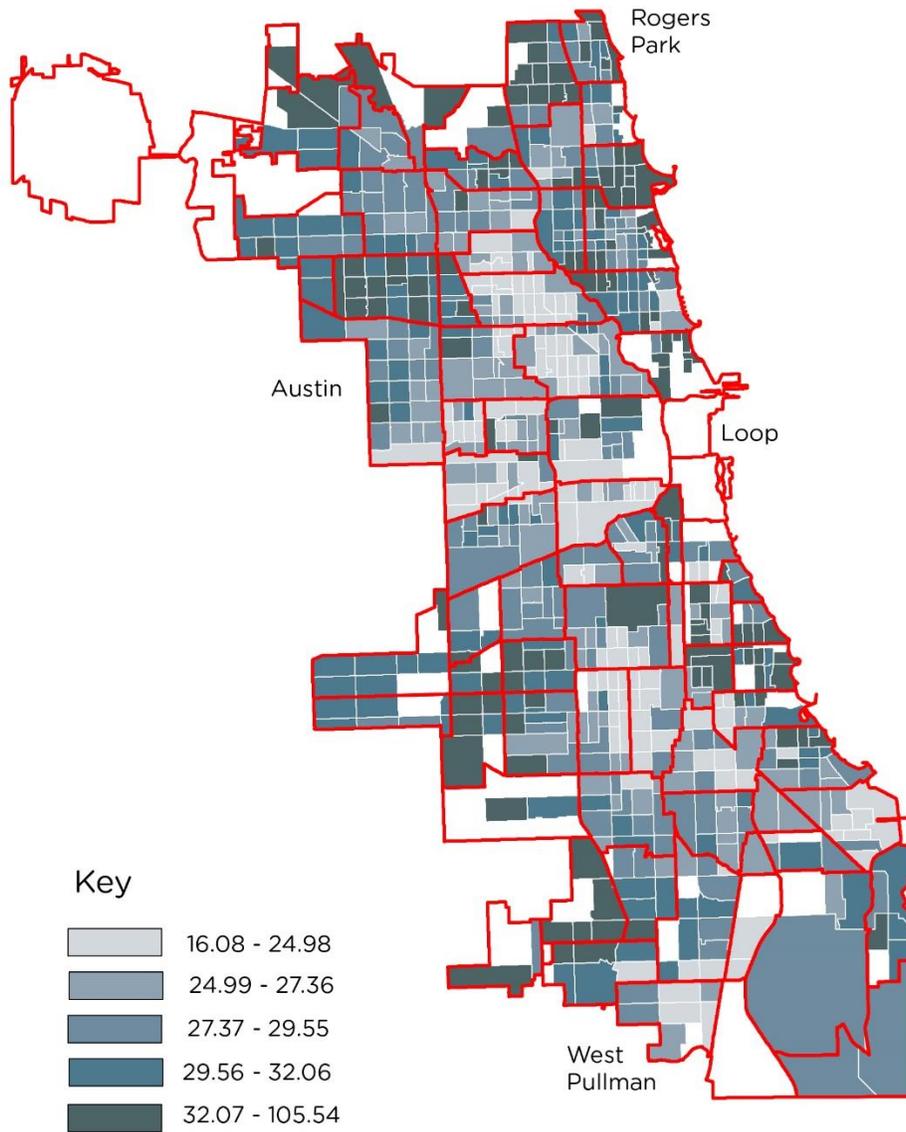
41	Hyde Park	24%	10%	\$ 1,284	\$ 570
16	Irving Park	7%	3%	\$ 1,176	\$ 506
11	Jefferson Park	7%	3%	\$ 1,157	\$ 522
39	Kenwood	25%	10%	\$ 1,326	\$ 599
6	Lake View	4%	2%	\$ 1,157	\$ 534
7	Lincoln Park	4%	2%	\$ 1,150	\$ 545
4	Lincoln Square	5%	2%	\$ 1,198	\$ 512
22	Logan Square	7%	2%	\$ 1,163	\$ 485
31	Lower West Side	10%	4%	\$ 1,083	\$ 455
59	McKinley Park	9%	4%	\$ 1,094	\$ 486
18	Montclare	13%	6%	\$ 1,228	\$ 555
75	Morgan Park	11%	5%	\$ 1,244	\$ 513
74	Mount Greenwood	5%	2%	\$ 1,271	\$ 578
8	Near North Side	5%	3%	\$ 1,270	\$ 563
33	Near South Side				
28	Near West Side	16%	7%	\$ 1,131	\$ 514
61	New City	11%	5%	\$ 1,148	\$ 510
5	North Center	4%	2%	\$ 1,157	\$ 543
29	North Lawndale	18%	10%	\$ 1,180	\$ 506
13	North Park	9%	4%	\$ 1,183	\$ 577
10	Norwood Park	7%	3%	\$ 1,244	\$ 544
36	Oakland	22%	10%	\$ 1,163	\$ 553
76	O'Hare	9%	5%	\$ 1,271	\$ 603
15	Portage Park	7%	3%	\$ 1,208	\$ 530
50	Pullman	14%	7%	\$ 1,163	\$ 378
54	Riverdale				
1	Rogers Park	13%	7%	\$ 1,271	\$ 547
49	Roseland	14%	6%	\$ 1,218	\$ 461
46	South Chicago	13%	5%	\$ 1,190	\$ 455
51	South Deering	16%	6%	\$ 1,284	\$ 471
30	South Lawndale	10%	5%	\$ 1,163	\$ 534
43	South Shore	25%	12%	\$ 1,298	\$ 517
3	Uptown	7%	4%	\$ 1,270	\$ 574
73	Washington Heights	11%	5%	\$ 1,178	\$ 469
40	Washington Park	18%	9%	\$ 1,193	\$ 570
62	West Elsdon	7%	3%	\$ 1,162	\$ 565
67	West Englewood	15%	6%	\$ 1,170	\$ 453
26	West Garfield Park	23%	12%	\$ 1,192	\$ 480
65	West Lawn	7%	3%	\$ 1,157	\$ 569
53	West Pullman	15%	6%	\$ 1,251	\$ 468
2	West Ridge	9%	5%	\$ 1,271	\$ 612
24	West Town	5%	2%	\$ 1,124	\$ 463
42	Woodlawn	45%	13%	\$ 1,245	\$ 466

Appendix 2: List of Data Variable Received

BILLING FILES	PAYMENT ARRANGEMENT FILE	RUN CONTINUOUS FILE
ACCT_ID	ACCT_ID	ACCT_ID
ESTABLISH_DATE	UABPYAR_ARRNG_NUM	PRINTED_DATE
PREMADDR	ARRNG_AMT	PRINTED_IND
WARD	CREATE_DATE	AMOUNT_ON_LETR
SCLS	DOWN_PYMT_AMT	USRLETD_LETR_CODE
SCLS_DESC	ARRNG_STATUS	
BILLDATE	COMPLETED_DATE	
BILL_FROM_DATE	DEFAULTED_DATE	
BILL_TO_DATE	CANCELLED_DATE	
CYCLE_CODE		
CYCLEDESC		
MN_IND		
METER_INSTALL_DATE		
PREV_BAL		
ADJUSTMENTS		
PAYMENTS		
WTCHGS		
SWCHGS		
TAXCHGS		
PENCHGS		
GBCHGS		
OTHERCHGS		
TOTALCHGS		
TGAL		
READ_TYPE		
TRBL_CODE		
REFUSE_UNIT		
SR_ENROLL_DATE		

Appendix 3: Usage Per Unit

Map 6: Average Annual Usage Per Unit in Tgals (thousand gallons)



Appendix 4: Annual Bills Breakdown, by Metering Status

(All figures exclude areas.)

Figure 5: Single Family Buildings

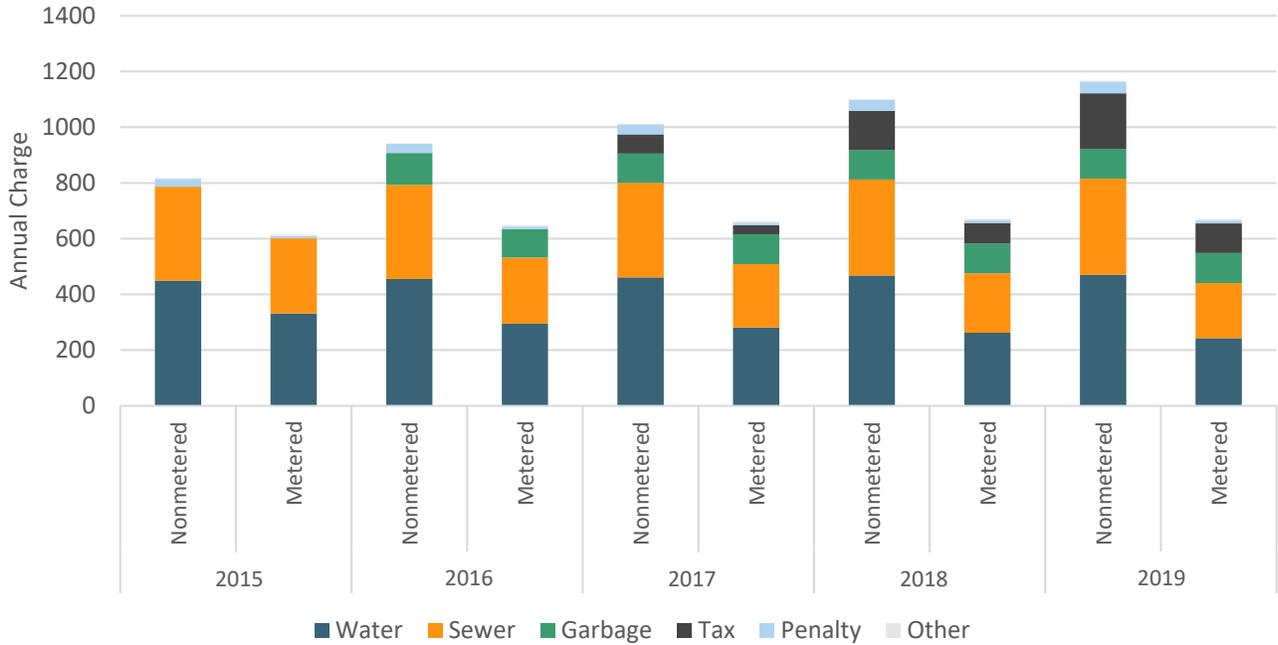


Figure 6: 2-5 Unit Buildings

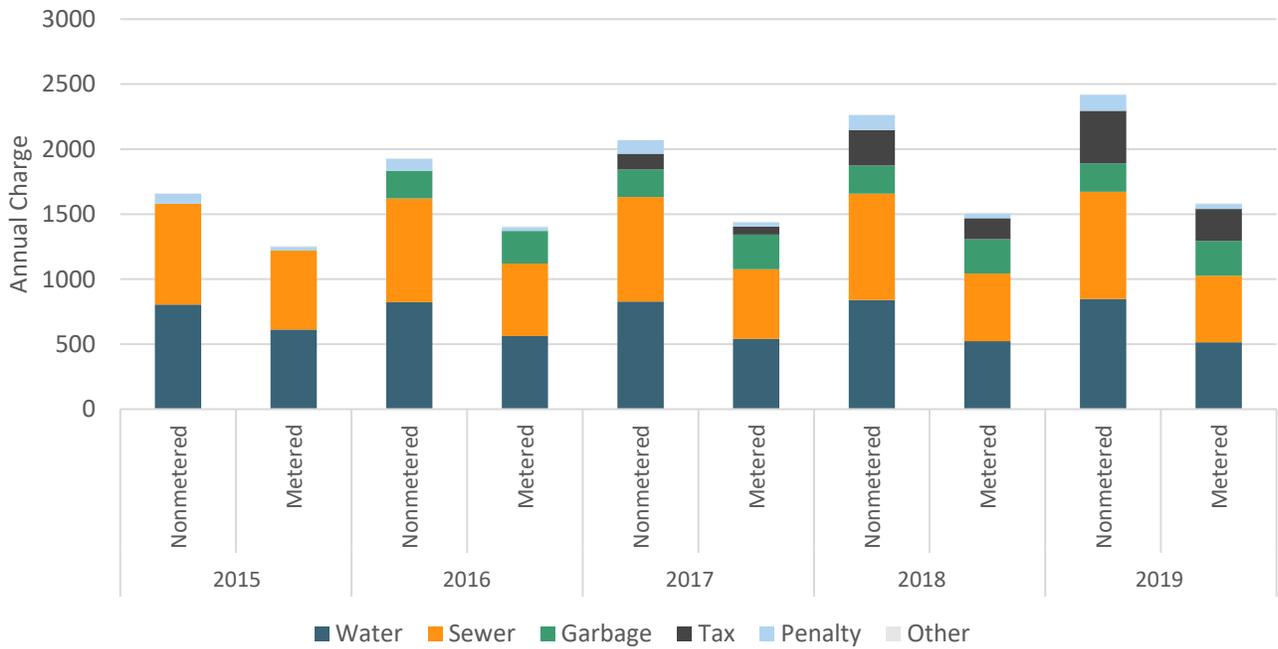


Figure 7: 6-12 Unit Buildings

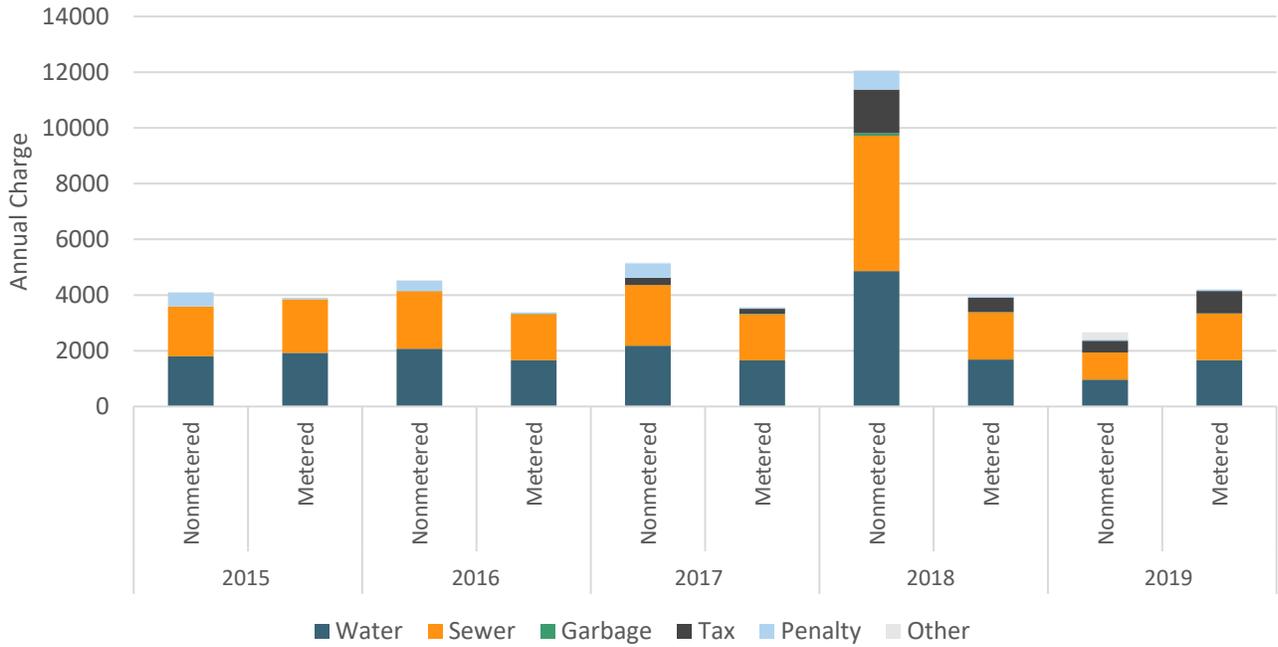
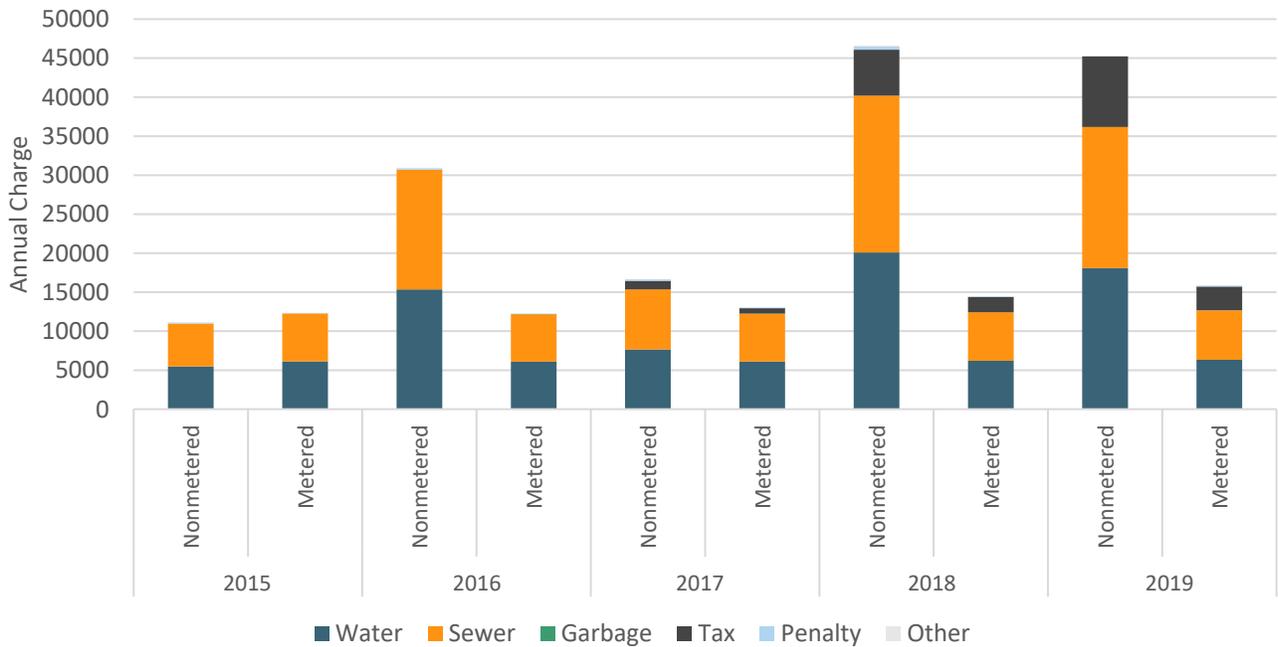


Figure 8: 12-Unit+ Buildings



Appendix 5: Utility, Resident, and Water Advocate Interviews Overview

We endeavored to conduct voluntary focus groups in each city, comprised of at least five residential ratepayers per session and lasting approximately 90 minutes. Meetings were conducted via a virtual meeting platform, and participants received a \$25 dollar gift card for their participation. Pursuant to the focus groups, individuals were identified for follow-up one-on-one interviews and offered an additional \$30 as compensation. These interviews lasted approximately one hour each. We also conducted interviews with utility and/or municipal employees from each city listed below; none of these participants were compensated.

The tally of focus groups, individual interviews, and utility interview participants are as follows (names omitted to preserve anonymity):

- Chicago
 - Focus group: Water Advocates, 10 organizational participants (no gift cards)
 - Resident: 3 interviews
 - Department of Finance: 2 interviews
 - Community Economic Development Association (CEDA): 2 interviews
- Detroit
 - Focus group: 4 participants
 - Resident: 2 interviews
 - Utility: 1 interview
- Philadelphia
 - Resident: 1 interview
 - Utility: 1 interview
- San Antonio
 - Focus group: 5 participants
 - Resident: 2 interviews
 - Utility: 1 interview

Appendix 6: Interview Guide: Chicago Residents

The following is the template interview guide used for interviews with residential ratepayers in Chicago. An edited version of this guide, adjusted for the local context, was used in interviews in other cities.

INTERVIEW TYPE: CHICAGO UBR PARTICIPANT (45-75 MINUTES)

Experiential

1. Have you ever had to miss a water bill payment? Can you tell us what led to the missed payment?
2. Have you ever had your water shutoff?
 - a. Can you share with us what led to the water shutoff?
 - b. Did the City communicate with you before your water was shutoff? How?
3. How worried are you about having your water shut off?
4. Is your water bill clear and easy to understand?
 - a. Are there fees or charges that might be confusing?
5. Does being enrolled in the Utility Billing Relief (UBR) program ease your mind about water shutoffs in the future?
6. What resources or support might you need to continue to successfully manage your utility bills?

Financial

1. Are you or someone in your household currently employed?
2. What method do you typically use to pay your water bill? Mail, online, by phone?
3. How often in the past 12 months have you been stressed about paying your water bill?
 - a. Are you worried about not being able to pay your water bill next month?
4. We recognize that your water bill is not your only bill. How do you make decisions about which bills you will pay, and which will have to wait until next month?
5. Has the COVID-19 pandemic affected your ability to pay the water bill? How?
6. Prior to the Utility Billing Relief (UBR) program, did you receive any communications about, or assistance with programs to help you pay your water bill?
7. Prior to the Utility Billing Relief (UBR) program, were you on a water utility assistance program to help pay your bill? If yes:
 - a. What was the name of the program?
 - b. How long were you enrolled in the program?
 - c. Did that program help you pay your water bill? (ranking question)
8. Do you believe you will be able to meet the requirements/arrangements of the Utility Billing Relief (UBR) program?

Communications

1. How did you learn about the Utility Billing Relief (UBR) program?
2. Can you describe your experience of enrolling in the Utility Billing Relief (UBR) program?
 - a. Was it easy or difficult to enroll?
 - b. How could the enrollment process be improved?
3. What benefits (if any) does the program provide to you?
 - a. Does it allow you to pay other bills, save money, etc.?
4. Did you receive any documents after enrolling in the program, such as a brochure with a customer help line, or other useful material to help you navigate the program?
5. Since enrolling in the program, have you received any communications related to your participation, either by mail or by phone?

Behavioral/Health

1. Do you have any emotional, health-related, or personal issues related to worries affording your water bill that you feel comfortable sharing?
2. Do you have other bills that may be stress-inducing for you? Does participating in the Utility Billing Relief (UBR) program allow you to pay other bills more easily? If not, please explain.

Is there anything else you would like to share with the City about your experience as a water utility customer?

Appendix 7: Chicago Resident Quotes

Missing Payments

“Yes, I’ve had to miss payments when I didn’t have enough resources. My bill arrived every 6 months, and sometimes it came out very high. So, the problem was not being able to pay the high bills.” —Spanish-speaking resident

After receiving a \$1,400+ bill (regular bill about \$60) and calling the City for help:

“I said, I need some help paying this water bill, this water bill is \$1,400. She said, ‘well the only thing you can do is set up a payment plan.’ I didn’t feel like I should be setting up a payment plan because I didn’t feel like the bill was mine. I never mind paying any of my bills if I make the bill. I didn’t feel like I made the bill, so I didn’t feel like it was mine to be setting up a payment plan to pay.” —Southside resident

Water Shutoff

“So that’s how I continued to have water, by going out there and turning the water on when I needed it and turning it off when I didn’t. That was the only way that I saw that I could stop this water bill from constantly running.” —Southside resident

“It’s really kind of scary because if people have a water bill and they don’t know about it, with the water running, no matter where its running, there should be some type of an alert. I don’t know what it should be to let people know that they are losing water because that’s costing people money.” —Southside resident

“Sometimes they have to make a decision on if they’re going to get their medicine, pay their bills, have something to eat. Sometimes their paying one bill, thinking their paying another bill.” —Southside resident

Customer Service/Enrollment Challenges

“They don’t want to get on the telephone and people put them on hold forever or talk to them like they don’t care.” —Southside resident

On helping elders enroll in assistance programs like LIHEAP:

“Well, the problem with signing is they don’t know how to sign it on the computer or on their phone. So, a lot of the people have applied for it, and it’s been denied because their signature is not on it. They don’t know how to sign the machine.” —Southside resident

UBR

“It [UBR] has helped me by reducing my stress. I like that the bills are issued on a monthly basis now instead of every 6 months, and I’m going to have an easier time paying my bill.” —Spanish-speaking resident

Appendix 8: Chicago Water Advocates Focus Group and Feedback

Mission, Vision, and Leadership

- The Department of Water Management (DWM) is part of the community, and the new commissioner needs to see themselves as such. There should be a public service ethic, but also a commitment to making the water department feel like it is there to serve people.
- The oppositional dynamic between the community and water department is a huge barrier. Posing the community as not an expert in their life experiences is inconsequential. There is this attitude that it is the public's problem, not the department's problem. Having strong leadership that makes it not oppositional would be a huge shift. The fact that they did not hire external staff to field calls, need to investigate in case management, and have yet to share information in different languages communicates that they don't see it as their problem. The Water utility needs to be part of the community.

Operations and Data Management

- There is an open issue regarding the city bringing a new technology online for merging and consolidating data between the three entities (DOF, Water, and Third Party Agency). Is there any IT department? Where are they in progress? ***How do we get an integrated real-time system in place for managing rate payer accounts and managing that data?***
- It was unacceptable that the water department did not know whose water was shutoff. They are direct service providers; they do not act like it. The city is not centering rate payers as their customers. There is a defined protocol for how the city deals with customers to ensure they are getting what they need.
- Systems reflect the priorities of the folks that design them. They have multiple data management systems, but it is unclear how they are tracking data. Benign neglect becomes active harm. Folks cannot find the information they need. Centralized data management seems necessary. The City needs to prioritize collecting the right data. Check in with households to see what they need to know. The City needs to have focus groups to see what issues the people are having. Need to chat with the community to see what their specific needs are. ***Right now, the system is designed for the needs of the administrator. What if someone needs an emergency water turn on?*** The City needs to make an investment in what their data system should be doing to meet customer needs.
- Need a report card on water quality data by neighborhood.
- Need transparency on data. Share the data and communicate it.
- There should be an online lead service line (LSL) inventory so you can check by address whether the household has LSLs. Would like them to develop this—it is something they could start now and could start collecting data now.

Customer Service and Outreach

- Water advocates in Chicago have been engaged with customers who have been shutoff and it is very difficult for them to get assistance from the water department for how they can get their water restored, and how the billing process works when you need to get restored. It is difficult to get people enrolled without them focusing on ways they may not be up to code or violating some type of requirement. This is not an easy task for the everyday person. This is a big issue and needs to be assessed more. The City should know that it is not clear how to navigate the system to resolve issues.

- Water advocates have had to call as ombudsmen—folks need translators or witnesses.
- The City is the first line when folks have concerns with their water bill; there needs to be some type of check and balance. If a person is not satisfied with their service, does it end right there? How do we turn things around for the customer? With the water contracts the city has, are they making a profit with these contracts? If so, we should designate a percentage of the funds coming from these contracts? Profit should go to customer service improvements. ***Set aside funds to benefit the customers.*** These questions require more attention from and contact with the main head of the water department. Something that is easier to get people to the water department. Think of an SEP—supplemental environmental project.
- Water advocates do not know the ins and outs of the water department’s budget. DWM feels weird about redistributing some of their funds. We have heard from the city legal reasons they cannot help on the private side when we know there are a lot of inequities around what people pay for water. Take some of DWM’s dollars and invest in customer service. Much more education on how the budgeting process works. Very big and important conversation.

Water Rates, Fees, and Taxes

There are options for rate increases that could also be considered. Some Environmental Justice partners are examining the merits of rate increases for heavy polluters, for instance. Metered rates and the nonmetered formula could be indexed to median income for that census tract. Rates could be raised for hotels, as that cost would be mostly borne by out-of-town visitors. Many construction projects use (and waste) immense amounts of water and could be charged accordingly. Other alternatives likely exist, and strategic/pin-pointed rate increases, for the purpose of offsetting or lowering costs elsewhere, should be explored.