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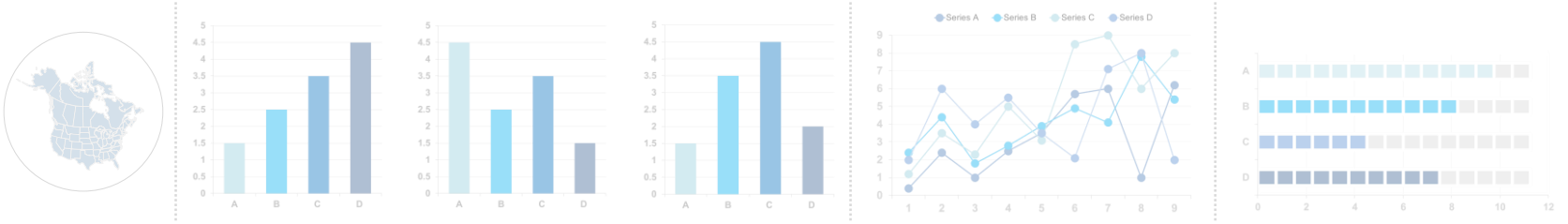
INSIGHT REPORT

U.S. Municipal Water & Sewer:
Annual Utility Rate Index, 2023

November 2023



Overview

BACKGROUND

Bluefield Research has for the eighth consecutive year engaged in a comprehensive analysis of water and sewer rates for 50 of the largest U.S. cities. This analysis considers the associated impacts on residential water and sewer bills, as ratepayers represent the primary funding source for municipal operating expenditures.

Across the approximately 50,000 water and 21,000 wastewater systems in the U.S., the need for investment in water and wastewater utility infrastructure is widely recognized. In 2022, Bluefield forecasted US$595 billion in capital expenditures and US$1.1 trillion in operating expenditures for municipal utilities through 2030. These numbers continue to trend upward due to aging systems, urban population growth, and efforts to expand existing water infrastructure.

While Bluefield Research has identified overarching trends in water and sewer rates across the country, every utility faces unique challenges influencing its rate structure. Many public utilities schedule rate increases over several years and are often influenced by local and regional politics. Further, the emerging challenges posed by shifting consumer behaviors and external impacts (e.g., climate change and extreme weather) have compounded the inevitable routine maintenance and capital improvement costs that impact utility rates.

TAKEAWAYS

- Across 50 of the largest U.S. metropolitan areas, monthly household water bills averaged US$50.61 and monthly sewer bills averaged US$71.16 based on average household consumption.
- Over the past 12 years, combined household water and sewer bills increased by an average of 4.2% each year. From 2022 to 2023, combined household water and sewer bills increased by 3.9%, down slightly from the 5.2% increase observed from 2021 to 2022.
- For a typical U.S. household, sewer costs comprise 58.9% of the combined monthly water and sewer bill, reflecting the higher costs associated with upgrading and maintaining sewer systems and treatment costs.
- Currently, 74% of the water utilities feature a tiered pricing structure (i.e., volume-based pricing) for residential water rates, while 72% of wastewater utilities use a flat rate structure that is largely tied to water consumption volumes.
- Notable rate increases are largely in response to rising costs (i.e., inflation) affecting operations and maintenance along with capital investments for aging infrastructure.
- Alternatively, declining reservoir levels for select cities have driven up water purchases from other providers and increased their rates.

Built on years of data and analysis, Bluefield Research's Industrial Water Corporate Subscription has become a key resource for companies across the value chain to identify the key states, systems, and opportunities that stand out in an already crowded field with increasing competition.

Research Methodology

Bluefield analyzed water and sewer pricing in 50 U.S. metropolitan areas across 56 water and sewer utilities to identify key trends in municipal utility bills.

Regions and Cities Evaluated

Source: Bluefield Research

Research Scope

- The utilities surveyed collectively provide potable water and wastewater collection and treatment services to approximately 20% of the U.S. population.
- Residential water and sewer bills were calculated based on a 30-day billing period for standard 5/8" meters and reflect new rates effective from 1 July 2022 to 30 June 2023.
- Bills were calculated using a benchmark national average consumption level in addition to specific regional average consumption levels, allowing for a range of comparative conclusions to be drawn.
- Cities were grouped into four regions closely associated with those established by the U.S. Census Bureau to identify relevant regional variations in water and sewer pricing: Northeast, Midwest, South, and West.

Key Assumptions

- Unless otherwise specified by a surveyed utility, monthly residential sewer usage is assumed to be 100% that of potable water.
- For cities that bill based on individual household Winter Average Consumption—or other seasonal averages—a uniform monthly consumption was assumed for all residents within the metropolitan area.
- When applicable, sewer rates exclude charges for stormwater and/or impervious surface runoff.

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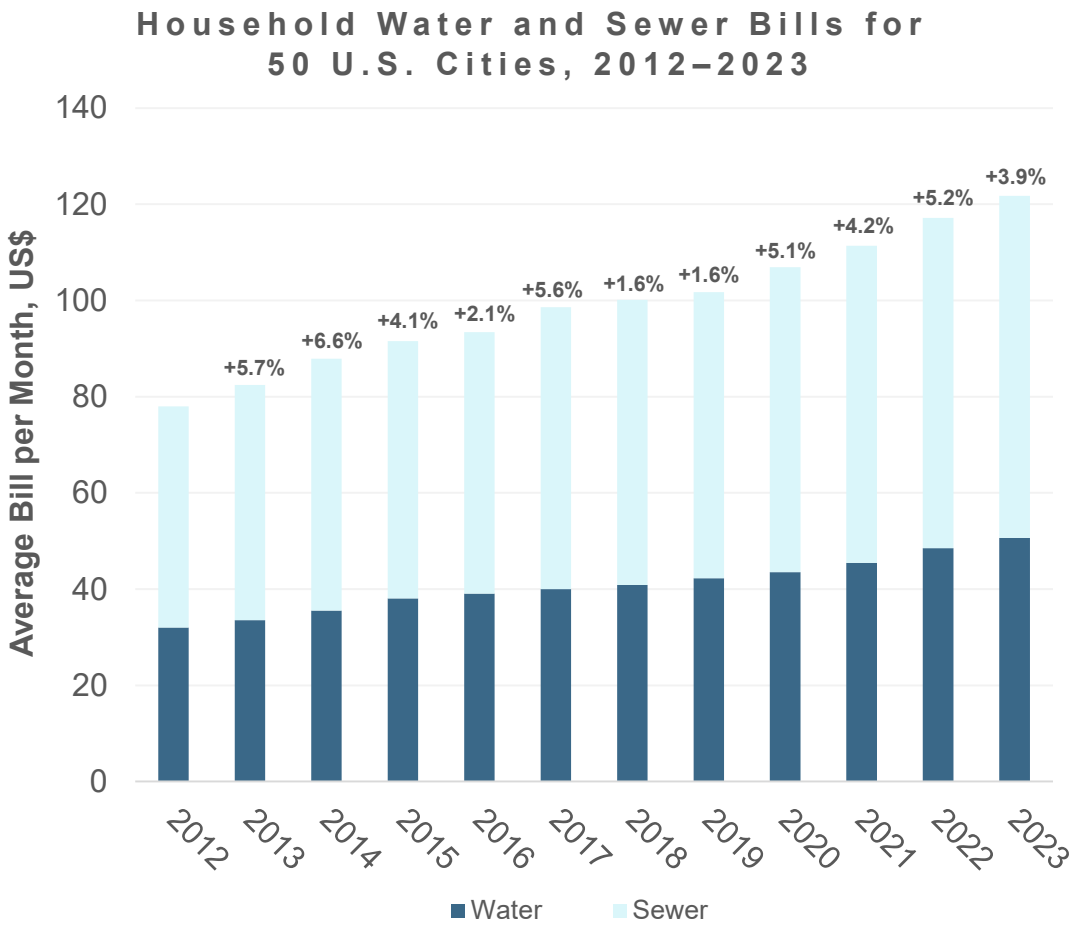
Water and Sewer Monthly Bills for U.S. Cities, 2012–2023

Combined water and sewer bills increased on average 4.15% per year from 2012 to 2023 as higher costs, aging infrastructure drive rate increases across the U.S.



Source: Utilities, Bluefield Research

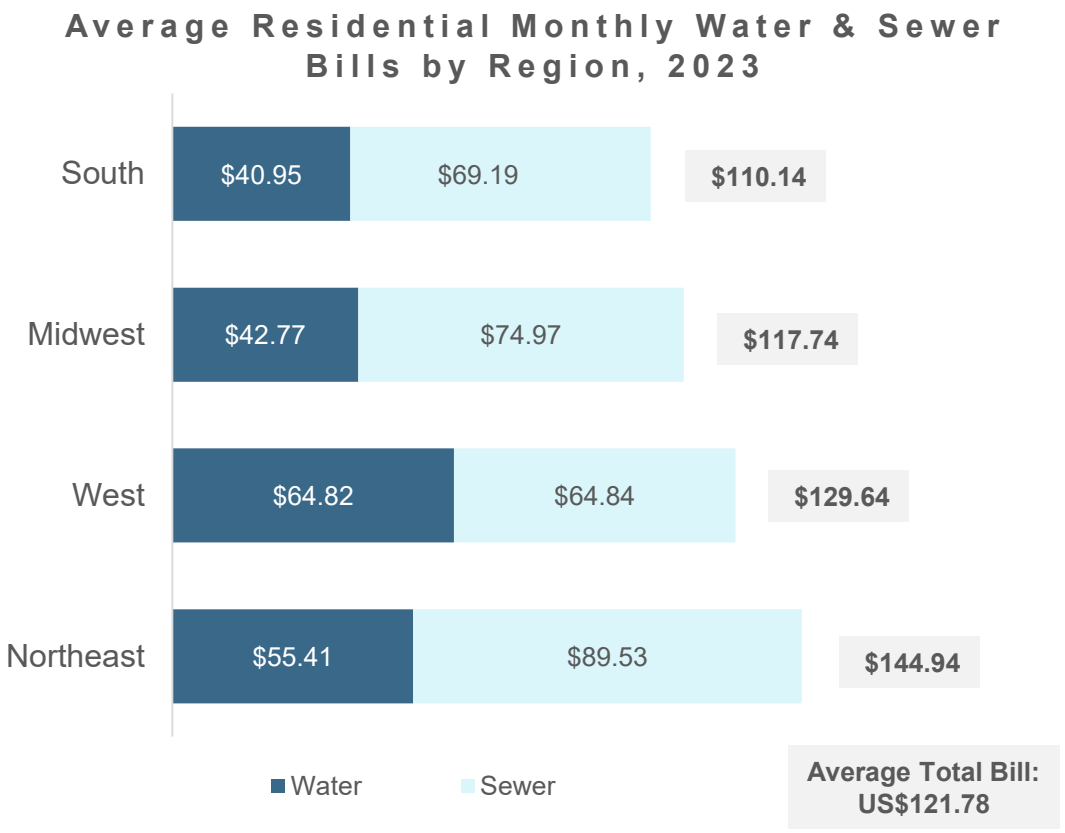
Analysis

The combined water and sewer bill for a typical U.S. household has increased by 56.2% since 2012.

- As a proportion of a typical household's combined monthly bill, sewer charges have remained constant since 2012 at approximately 58.9%.
- This past year, the average combined water and sewer bill rose by 3.94%, using the average water consumption for a typical U.S. household of 7,230 gallons per month.
- The only U.S. cities to see a decline in their combined water and sewer bills were Jacksonville, FL; Long Beach, CA; and San Antonio, TX; while four cities saw increases of over 10%.
- 74% of utilities charge more for wastewater collection and treatment than for potable water provision, with an average difference of US$20.55.
- Higher costs for labor, chemicals and materials, and inflationary pressures were among the most cited reasons for rate increases. Other drivers included new programs targeting drought resiliency in California as well as debt services for capital programs in Detroit, MI, and Washington, DC.
- Many cities, such as Riverside, CA, were forced to implement and resume new rate schedules after years of postponements, particularly as COVID-19 pandemic rate relief programs began to expire.

Regional Rate Comparison for Residential Water & Sewer Bills

Monthly water bills range from a low of US$19.51 in San Antonio, Texas, to a high of US$121.68 in Portland, Oregon. Monthly sewer bills range from a low of US$11.24 in Long Beach, California, to a high of US$170.40 in Seattle, Washington.



Note: Values based on variable regional consumption rates
Source: Bluefield Research

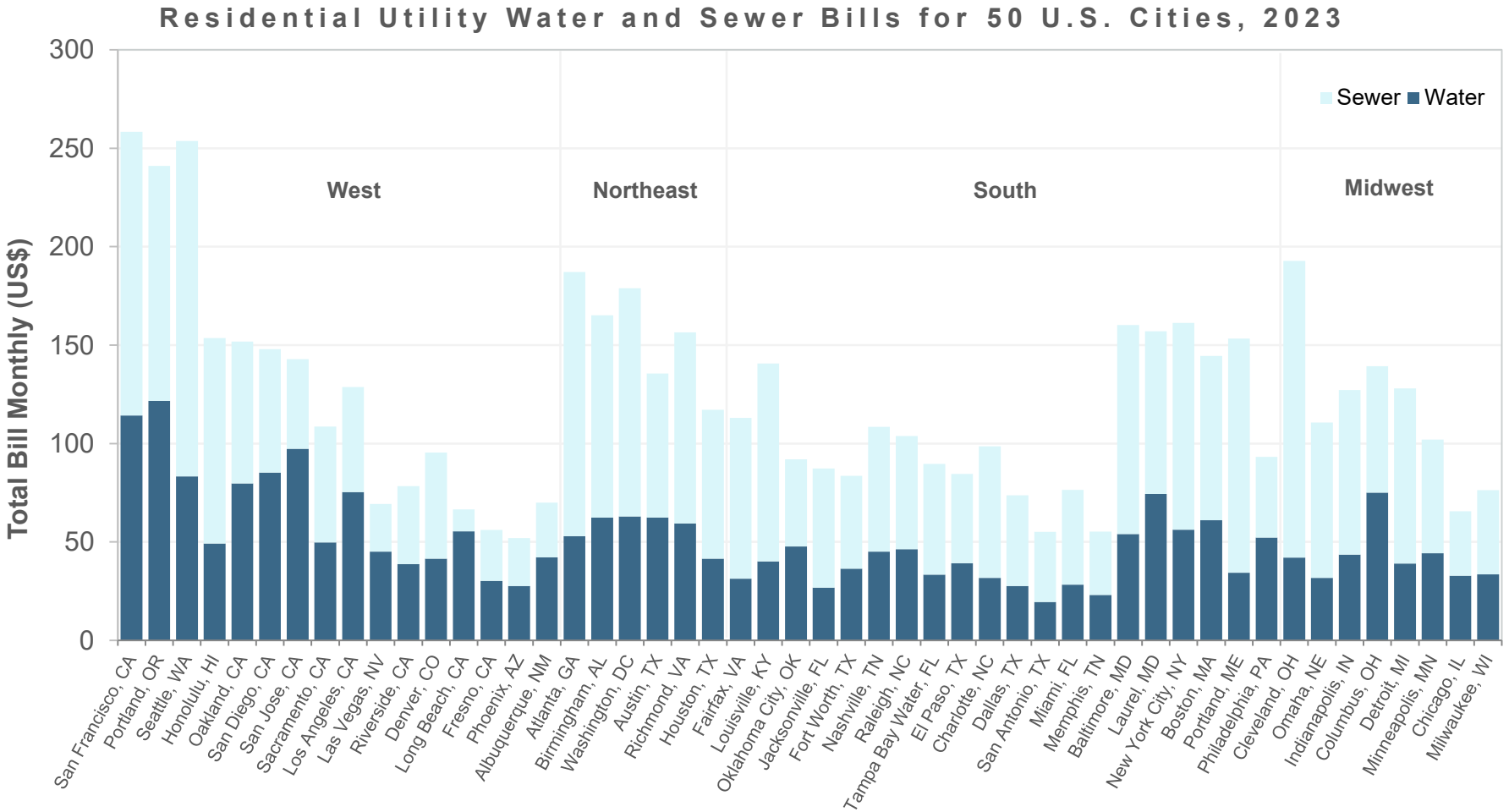
Analysis

The variety of water and sewer rates in each region illustrates the unique water management challenges faced by cities across the U.S.

- In 2023, households in the Northeast faced the highest average combined water and sewer bills with an average combined monthly bill of US$144.94.
- Large water utilities in the Northeast and West face higher bills, in part due to the scale of operations and maintenance (O&M) and rising treatment costs.
- Utilities in the Western U.S. rely more heavily on seasonal rate structures to help stabilize revenues and encourage conservation, particularly in Los Angeles, CA, and Phoenix, AZ.
- Six utilities charge additional volumetric or commodity charges on top of fixed rates and base charges. Volumetric charges are used to pay for water quality and water systems improvements or are charged as watershed protection fees.
- With inflation driving up water and sewer rates, many utilities have implemented assistance programs for low-income or elderly resident households. Cities that provide these services include Albuquerque, Austin, Seattle, Omaha, Columbus, and Memphis. Managing water affordability extends beyond utility rates to include on-site pipe and infrastructure upgrades to address leaks.

City Pricing Index for Water & Sewer

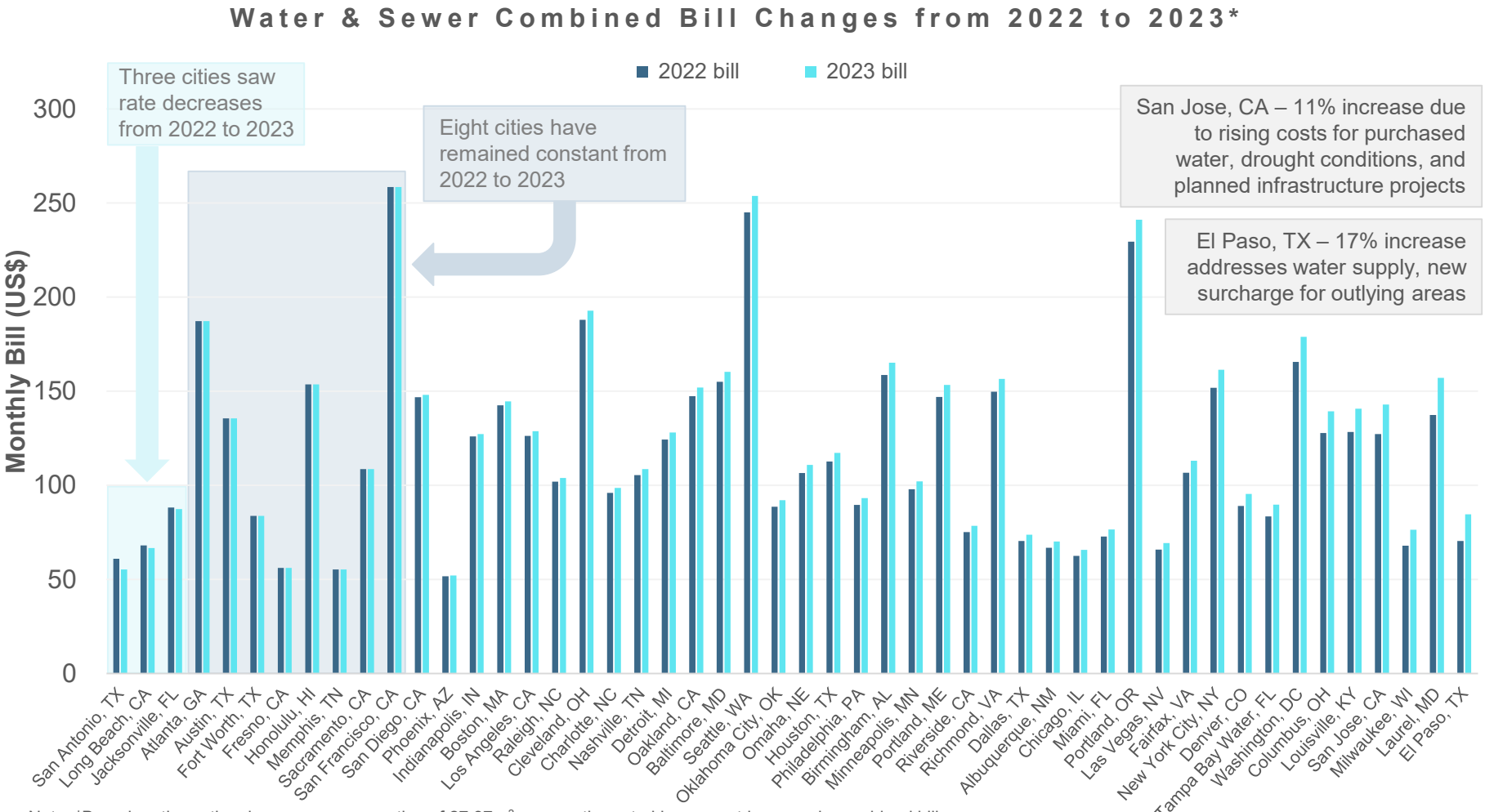
The average combined water and sewer bill for a typical U.S. household across the 50 municipalities is US$121.78 per month.



Note: Based on individual consumption rates corresponding to each municipality
Source: Bluefield Research

Changes in Household Water & Sewer Bills, 2022-2023

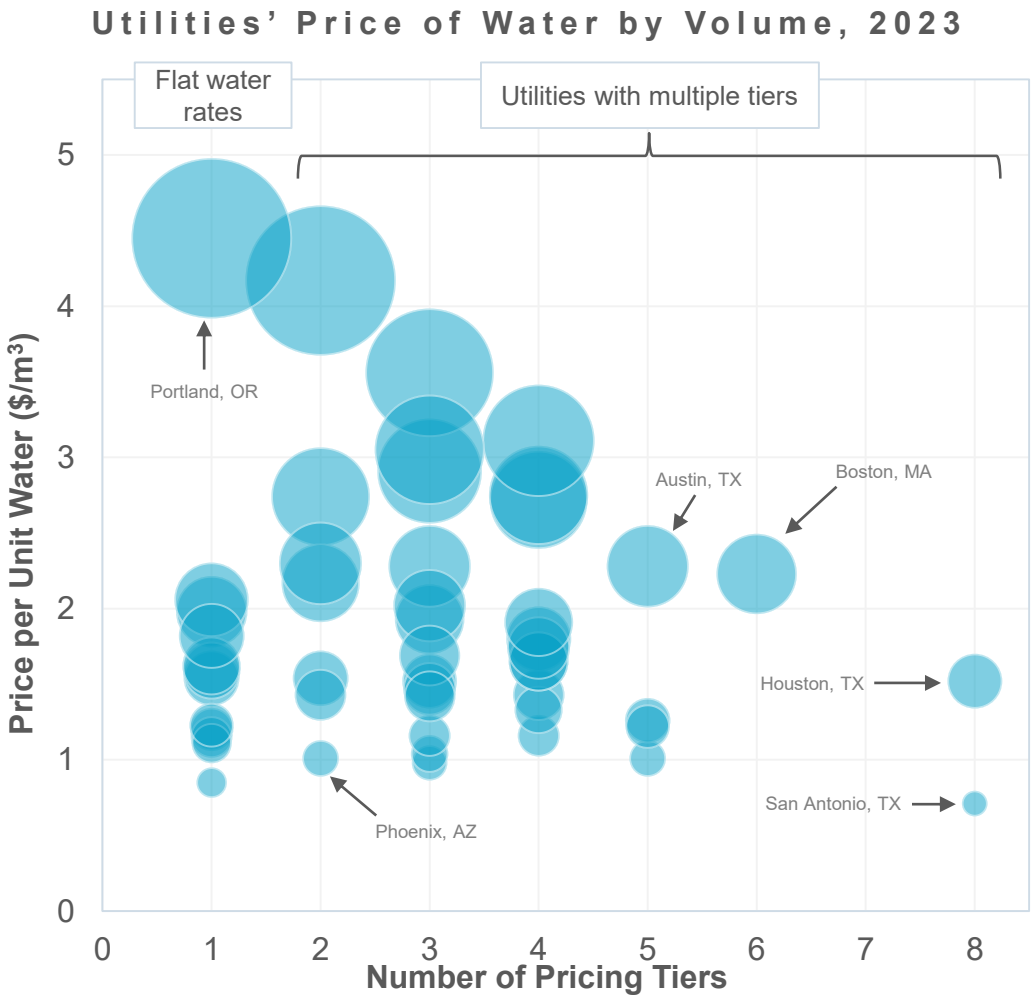
Of the 50 U.S. cities analyzed, 39 cities saw increased combined water and sewer bills, while 3 cities decreased their combined water and sewer bills in 2023.



Note: *Based on the national average consumption of 27.37m^3 per month; sorted by percent increase in combined bill
Source: Bluefield Research

Utilities' Price Structure Complexity and Bill Size

Utilities that employ more complex water pricing structures—with more consumption-based pricing tiers—don't necessarily charge households more per month.



Source: Bluefield Research

Analysis

Utilities most commonly utilize a multitiered water price structure to charge households for high water use and send strong conservational signals via pricing.

- Philadelphia, PA, and Portland, ME, are the only utilities with regressive price structures that provide lower rates to residents who consume more water.
- Some utilities include a monthly, volumetric allowance alongside fixed water rates as a means of setting a floor on revenue despite reduction in consumer demand related to improved water use efficiency. This includes Nashville, TN (2 CCF); Phoenix, AZ (6 CCF October–May, 10 CCF June–September); Portland, ME (1 CCF); Miami, FL (3 CCF); and El Paso, TX (5 CCF).
- Austin, TX; Fairfax, VA; and Denver, CO; all have a unique price structure that incorporates a tiered, fixed cost depending on total monthly metered water use.
- Houston and San Antonio, TX, have an eight-tiered pricing structure that charges users at rates that differ according to meter size. After surpassing a certain volume, the users are charged a fixed price regardless of meter size on top of the initial charges.
- Utilities consistently employ a more complex water price structure designed to charge the lowest rates for typical indoor water use and a simpler sewer price structure that relies heavily on a fixed monthly charge and a flat-rate volumetric charge.

Implementing Residential Municipal Water and Sewer Rate Increases

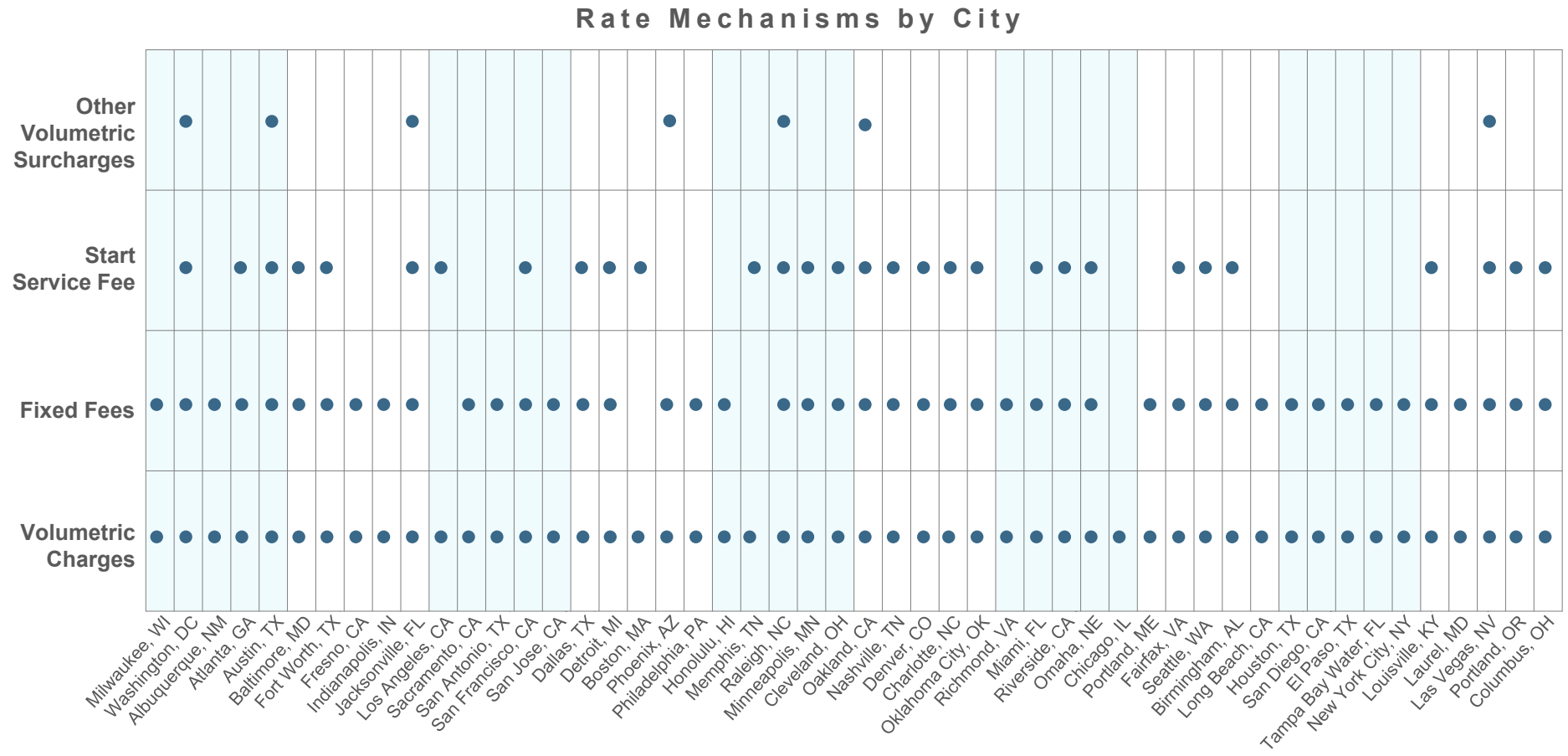
Whether addressing capital improvements or responding to increased costs associated with water treatment and distribution, utilities may implement a range of tools to price water and sewer for residential customers.

Mechanism	Description
Volumetric Charges	• Customers pay an amount proportional to water usage and wastewater. Volumetric charges can be uniform across all amounts of water consumed or they can be tied to an increasing or decreasing block tariff structure. • Volumetric charges range from US$0 to US$10 per centum cubic feet (CCF) within the first block tariff for water and between US$0 to US$18 per CCF within the first block tariff for wastewater. • Other volumetric surcharges may be charged to customers based on water usage or wastewater and are used to offset environmental impacts through environmental protection fees or may be used to fund community assistance and affordability programs. • Six cities—Austin, Las Vegas, Phoenix, Raleigh, San Antonio, and Washington, DC—have volumetric surcharges of less than US$1 per CCF.
Fixed Fees	• Monthly charges paid by customers irrespective of water and wastewater volumes. • Often include the costs associated with maintaining water and sewer infrastructure. In some states, the fixed fee also includes a monthly minimum charge for water usage. • Range from US$0 to US$58 for water and US$0 to US$77 for sewer. • Boston, Chicago, Los Angeles, and Memphis do not have a fixed fee for water and sewer use.
Startup Service Fees	• Startup service fees are paid one time when customers establish an account with the water or wastewater utility. • These fees are often associated with administrative costs (such as billing fees) and initial water meter readings. • Startup service fees are not the same as connection fees, which are paid when new construction is integrated into an existing water utility's network. • Startup service costs range from US$10 to US$60.

Source: Bluefield Research

Water Rate Mechanisms by State

Of the 50 cities analyzed, most employ two to three pricing mechanisms for water and sewer. Fixed fees and volumetric charges are the most significant drivers of monthly bill changes.



Source: Bluefield Research

Water and Wastewater Utility by City (1)

City	Region	State	Water Utility	Wastewater Utility	Average Water Consumption (m^3 per month)
Albuquerque	West	New Mexico	Albuquerque Bernalillo County Water Utility Authority		26.37
Atlanta	South	Georgia	City of Atlanta, Department of Watershed Management		23.15
Austin	South	Texas	Austin Water		26.96
Baltimore	Northeast	Maryland	Baltimore City Department of Public Works		30.18
Birmingham	South	Alabama	Birmingham Water Works	Jefferson County Environmental Services	22.27
Boston	Northeast	Massachusetts	Boston Water and Sewer Commission		19.04
Charlotte	South	North Carolina	Charlotte Water		20.51
Chicago	Midwest	Illinois	City of Chicago, Department of Water Management		23.44
Cleveland	Midwest	Ohio	City of Cleveland, Division of Water	Northeast Ohio Regional Sewer District	19.34
Columbus	Midwest	Ohio	City of Columbus, Department of Public Utilities		19.34
Dallas	South	Texas	City of Dallas, Water Utility Department		26.96
Denver	West	Colorado	Denver Water	City of Denver, Wastewater Management Division	32.52
Detroit	Midwest	Michigan	City of Detroit, Water and Sewerage Department		23.15
El Paso	South	Texas	El Paso Water Utilities		26.96
Fairfax	South	Virginia	Fairfax Water		21.97
Fort Worth	South	Texas	City of Fort Worth, Water Department		26.96
Fresno	West	California	City of Fresno, Department of Public Utilities		31.64
Honolulu	West	Hawaii	City of Honolulu, Board of Water Supply		42.19
Houston	South	Texas	City of Houston, Public Works and Engineering Department		26.96
Indianapolis	Midwest	Indiana	Citizens Energy Group		22.27
Jacksonville	South	Florida	Jacksonville Electric Authority		25.49
Las Vegas	West	Nevada	Las Vegas Valley Water District		39.26
Laurel	Northeast	Virginia	Washington Suburban Sanitary Commission		30.18
Long Beach	West	California	Long Beach Water Department		31.64
Los Angeles	West	California	Los Angeles Department of Water and Power	LA Sanitation	31.64

Water and Wastewater Utility by City (2)

City	Region	State	Water Utility	Wastewater Utility	Average Water Consumption (m^3 per month)
Louisville	South	Kentucky	Louisville Water Company		**19.63**
Memphis	South	Tennessee	Memphis Light, Gas & Water	City of Memphis Public Works	**23.44**
Miami	South	Florida	Miami—Dade Water and Sewer Department		**25.49**
Milwaukee	Midwest	Wisconsin	Milwaukee Water Works	Milwaukee Metropolitan Sewer District	**14.94**
Minneapolis	Midwest	Minnesota	Minneapolis Water Treatment and Distribution		**18.17**
Nashville	South	Tennessee	New York City Water Board		**23.44**
New York City	Northeast	New York	Suffolk County Water Authority		**23.15**
Oakland	West	California	East Bay Municipal District		**31.64**
Oklahoma City	South	Oklahoma	Oklahoma City Department of Utilities		**24.90**
Omaha	Midwest	Nebraska	Municipal Utility District of Omaha	Public Works Department Services	**27.83**
Philadelphia	Northeast	Pennsylvania	Philadelphia Water Department		**17.29**
Phoenix	West	Arizona	City of Phoenix Water Services Department		**43.07**
Portland	Northeast	Maine	Portland Water District		**16.11**
Portland	West	Oregon	Portland Water Bureau		**33.11**
Raleigh	South	North Carolina	Raleigh Public Utility Department		**20.51**
Richmond	South	Virginia	City of Richmond Department of Public Utilities		**21.97**
Riverside	West	California	City of Riverside, Public Utilities		**31.64**
Sacramento	West	California	City of Sacramento, Department of Utilities	Sacramento Area Sewer District—*Collection* Sacramento Regional County Sanitation—*Treatment*	**31.64**
San Antonio	South	Texas	San Antonio Water System		**26.96**
San Diego	West	Texas	City of San Diego Water Department		**31.64**
San Francisco	West	California	San Francisco Public Utilities Commission		**31.64**
San Jose	West	California	San Jose Municipal Water System		**31.64**
Seattle	West	Washington	Seattle Public Utilities		**32.52**
Tampa	South	Florida	Tampa Water Department		**25.49**
Washington, DC	Northeast		DC Water and Sewer Authority		**21.97**

Data Navigator – Related Municipal Water Data

Data underpins Bluefield's breadth of insight reports and analysis. Our Data Navigator platform supports corporate subscription clients with direct access to a range of municipal water data through an interactive, flexible platform.

Sample Municipal Water Data Dashboards

U.S. and Canada Municipal Utility Capital Improvement Plans

Dashboard Widgets:

- Country Share of Identified Budgets, US$
- State/Province Share of Identified Budgets, US$
- Year-over-Year Expenditure by Water Type
- Capital Expenditure by Water Type
- Capital Expenditure by Category
- Top 25 Capital Expenditure Subcategories by Water Type
- Utilities Ranked by Capital Expenditure, US$

U.S. Water and Sewer Utility Rate Index

Dashboard Widgets:

- Total Bill Growth, Water Bill Growth, Sewer Bill Growth (2022–2023)
- Combined Bill per 1,000 Gallons, Water Rate and Sewer Rate per 1,000 Gallons (US$)
- Monthly Billing in U.S. Cities Mapped
- Average Combined Bill by Region, US$
- Cities Ranked by Average Combined Rate
- Average Rate Over Time
- Average Bill Over Time

Other Municipal Water Data Dashboards

- Trenchless Pipe Forecast, 2022–2023
- U.S. Water & Sewer Pipe Network Infrastructure Forecast, 2020–2030
- PFAS Drinking Water Remediation Forecast, 2023–2030
- Infrastructure Investment and Jobs Act Water Funding
- U.S. State Revolving Funds
- Water Infrastructure Finance and Innovation Act Funding
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Companies are turning to Bluefield for in-depth, actionable intelligence into the water sector and the sector's impacts on key industries. The insights draw on primary research from the water, energy, power, mining, agriculture, financial sectors and their respective supply chains.

Bluefield works with key decision makers at utilities, project development companies, independent water and power providers, EPC companies, technology suppliers, manufacturers, and investment firms, giving them tools to define and execute strategies.

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