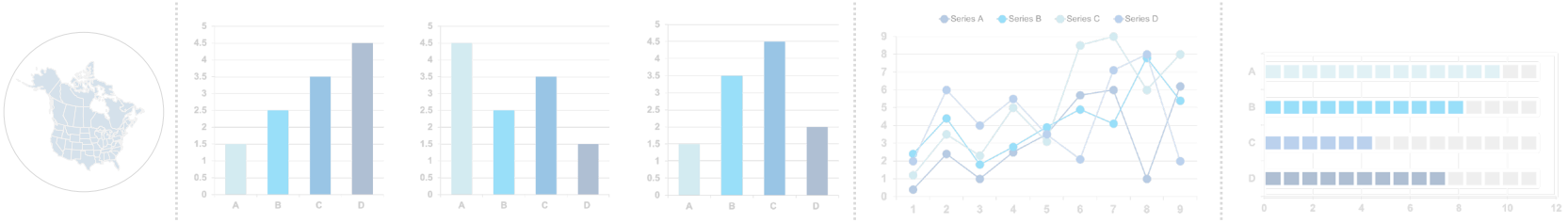
bluefield RESEARCH

INSIGHT REPORT

U.S. Municipal Water & Wastewater:
Annual Utility Rate Index, 2022

Complimentary Analysis

June 2022



Overview

BACKGROUND

Bluefield Research has embarked, once again, on an analysis of the water and wastewater rates in the U.S. and the associated impacts on residential water and wastewater bills. Ratepayers represent the primary source of funding 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 2021 and 2022, Bluefield forecasted US$586.00 billion of capital expenditures and US$1.06 trillion in operating expenditures for municipal utilities over the next decade. This number has trended upward because of aging systems, population increases in urban areas, and efforts to expand existing water infrastructure.

While Bluefield Research has identified overall trends in water and wastewater rates, every utility faces unique challenges that impact utilities' rates. As demonstrated by the data, there is no formula or pattern from utility to utility. While many public utilities schedule rate increases over a set number of years, rates are influenced significantly at a political and municipal management level. Further, emerging challenges posed by shifting consumer behaviors and external impacts such as COVID-19 compound with traditional issues like routine maintenance and capital improvement needs to shift utility rates.

Built on years of data and analysis, Bluefield Research's Municipal 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.

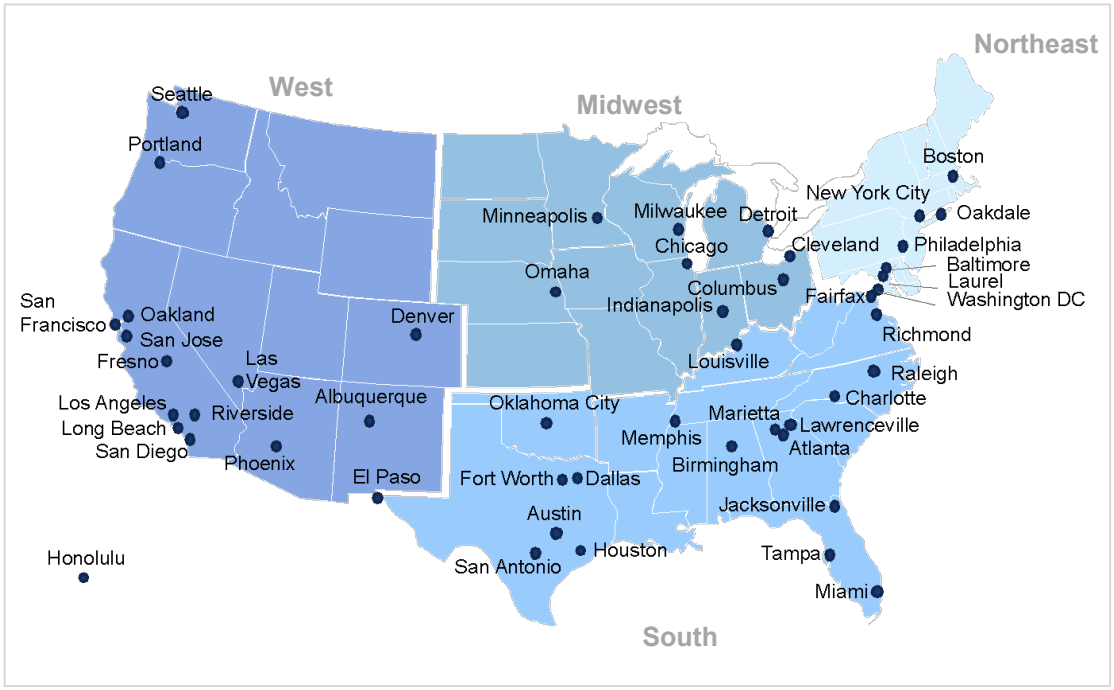
TAKEAWAYS

- Across the 50 largest metropolitan areas in the U.S., monthly household water bills average US$38.62, and monthly wastewater bills average US$54.53. This is based on average household consumption across the country.
- Combined household water and wastewater bills have increased an average of 5.1% per year over the past nine years. Although, from 2021 to 2022, combined household water and wastewater bills increased significantly by 5.34%, a steady increase from the prior year.
- For a typical U.S. household, wastewater, as a proportion of the combined monthly water and wastewater bill, dropped slightly to 58% from 59% from 2021 to 2022.
- 72% of the water utilities feature a tiered price structure for residential water rates, while 70% of wastewater utilities use a flat rate structure.
- The most significant rate increases are often in response to specific capital investment needs or for environmental protection and restoration programs. Rate increases are implemented through volumetric fixed commodity charges or additional fixed fees.
- The COVID-19 pandemic saw utilities pause rate increases or otherwise provide additional assistance to consumers. Many of these programs have since expired.

Research Methodology

Bluefield analyzed water and wastewater utility 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

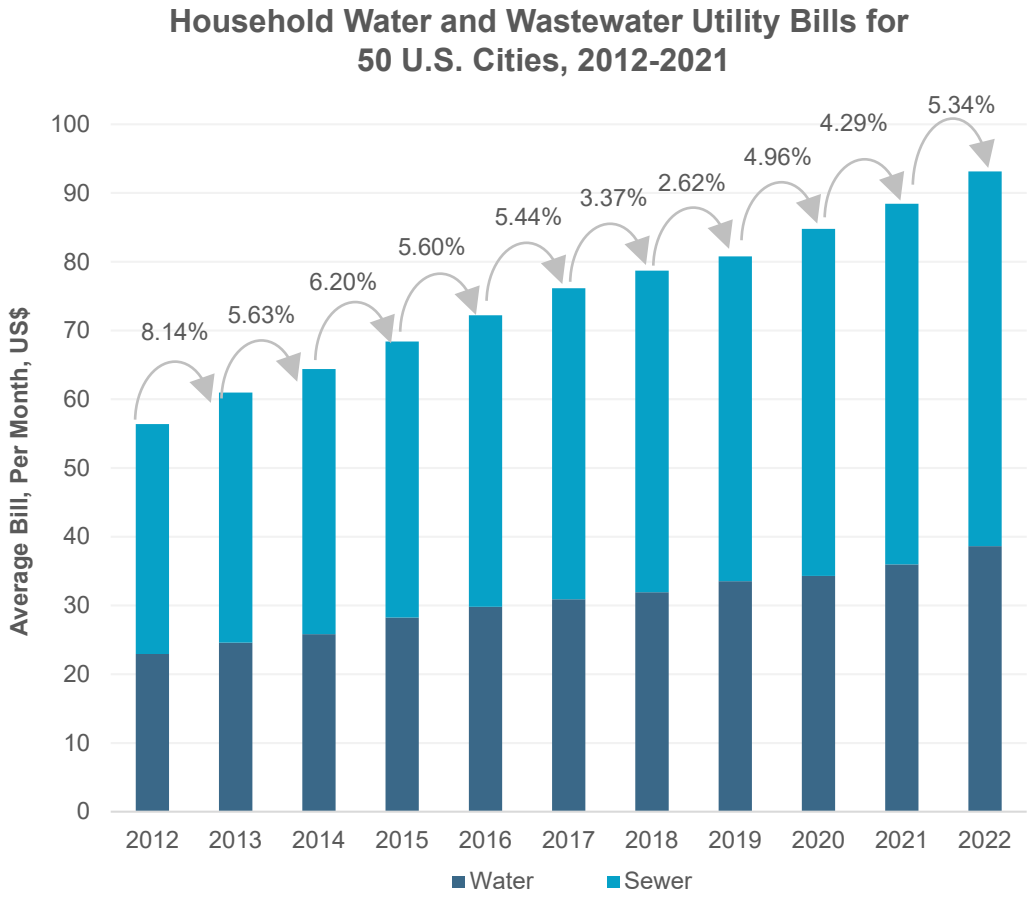
- The utilities surveyed collectively provide potable water and wastewater collection and treatment services to approximately 20% of the U.S. population.
- Residential water and wastewater bills were calculated based on a 30-day billing period for standard 5/8" meters and reflect rates effective from 1 July 2021 to 1 June 2022 for various municipalities, respectively.
- Bills were calculated using a benchmark national average consumption level in addition to specific regional average consumption levels to allow for a range of comparative conclusions to be drawn.
- Cities were grouped into four regions (Northeast, Midwest, South, and West) closely associated with those established by the U.S. Census Bureau in order to identify relevant regional variations in water and wastewater pricing.

Key Assumptions

- Unless otherwise specified by a surveyed utility, monthly residential wastewater 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, wastewater rates exclude charges for stormwater and/or impervious surface runoff.

Water and Wastewater Monthly Bills for U.S. Cities, 2012–2021

The national average water use for a typical U.S. household is 7,230 gallons per month and combined household water and wastewater bills have increased on average 5.1% per year for 2012–2021.



Source: Utilities, Bluefield Research

Analysis

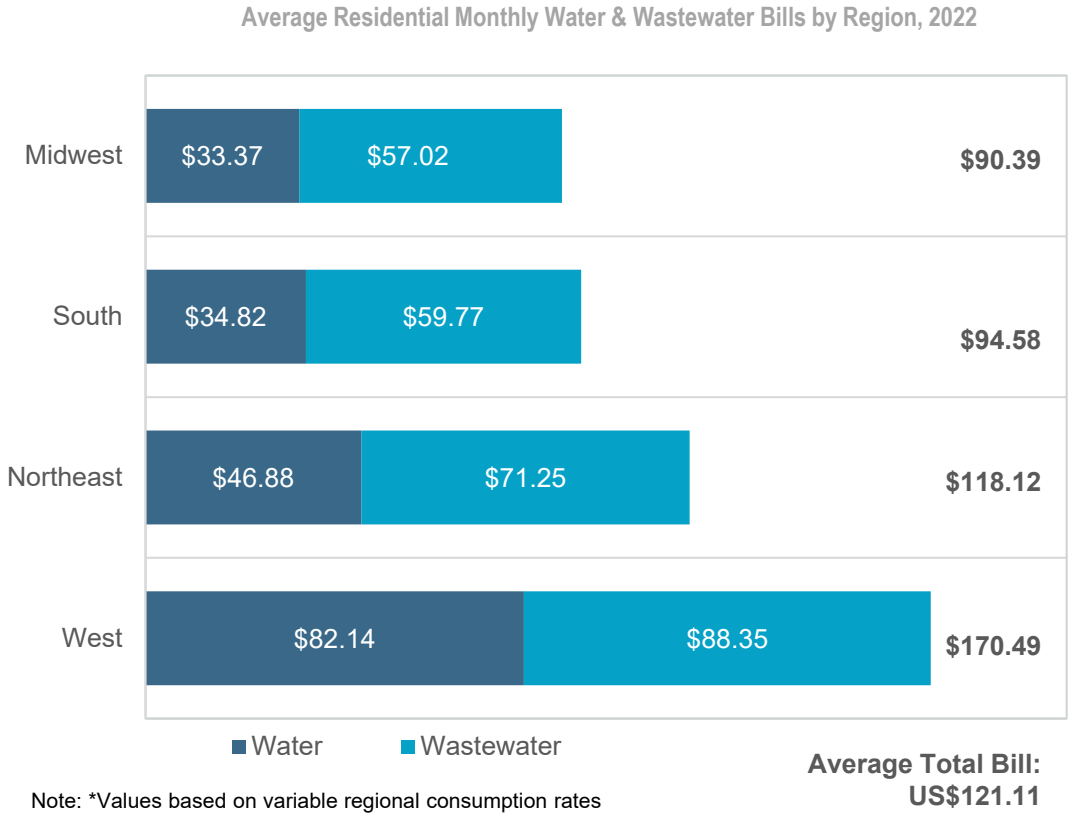
The combined water and wastewater bill for a typical U.S. household has increased by 65.2% since 2012.

- As a proportion of a typical household's combined monthly bill, wastewater charges have remained constant at approximately 59% since 2012.
- This past year, the average combined water and wastewater bill has risen by 5.34%
- Only Washington DC and Milwaukee saw declines in combined water and sewer bills, while 8 cities saw increases of over 10%
- 76% of utilities charge more for wastewater collection and treatment than for potable water provision, with an average difference of $18.
- Columbus OH saw a combined water and wastewater bill increase of 35%. Factors that have led to the bill increase include the need to raise capital for a new sewage diversion system.
- Rate increases across cities in the United States are being driven by the need to balance budgets, improve efficiency, and capital needs as cities anticipate additional growth in coming years.
- In response to COVID-19, utilities paused rate increases. Many of these programs are now expiring.

Regional Rate Comparison for Residential Water & Wastewater Bills

Monthly water bills range from a low of US$18.10 in Milwaukee, WI, to a high of US$158.82 in Portland, OR, while monthly wastewater bills range from a low of US$15.87 in Long Beach, CA, to a high of US$200.00 in Honolulu, HI.

Typical Water & Wastewater Bill Breakdown by Region, 2022 (US$)*



Average Total Bill: US$121.11

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

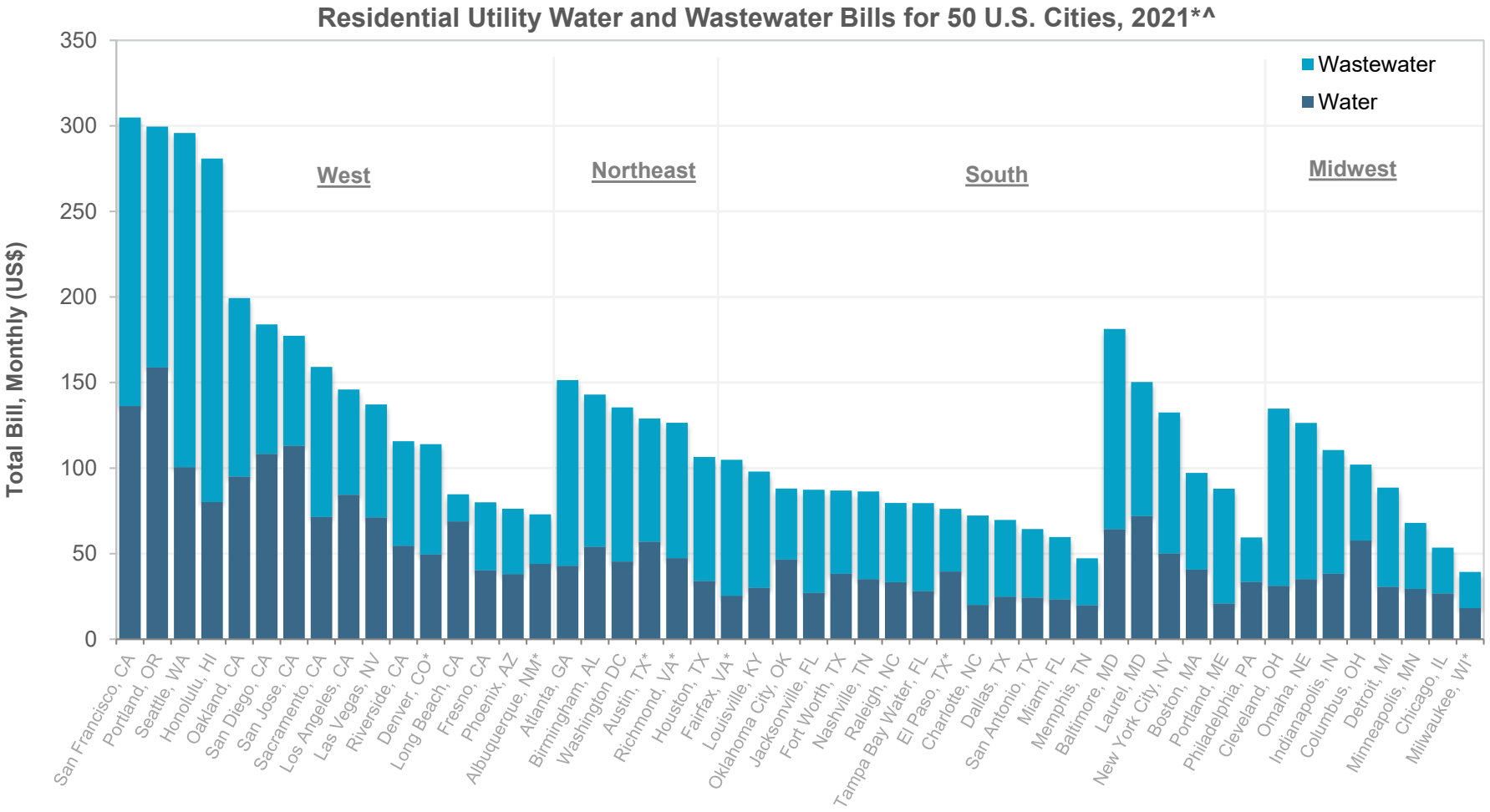
Analysis

Variations in regional water and wastewater rates illustrate the unique water management challenges faced by cities around the U.S.

- In 2022, households in the West faced the highest average combined water and wastewater bills with an average combined monthly bill of US$170.49.
- Large water utilities in the Northeast and the West face higher bills, in part due to the scale of Operations and Maintenance (O&M) and rising treatment costs.
- Rates in western utilities rely more heavily on seasonal rate structures to help stabilize revenues and encourage conservation, particularly in Los Angeles, California, and Phoenix, Arizona.
- 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.
- Affordability is not often centered in the setting of water and wastewater rates. Cities including Austin, Seattle, Omaha, Columbus, and Memphis have assistance programs for low-income or elderly residents.
- Managing water affordability extends beyond utility rates to include on-site pipe and infrastructure upgrades to address leaks.

City Pricing Index for Water & Wastewater

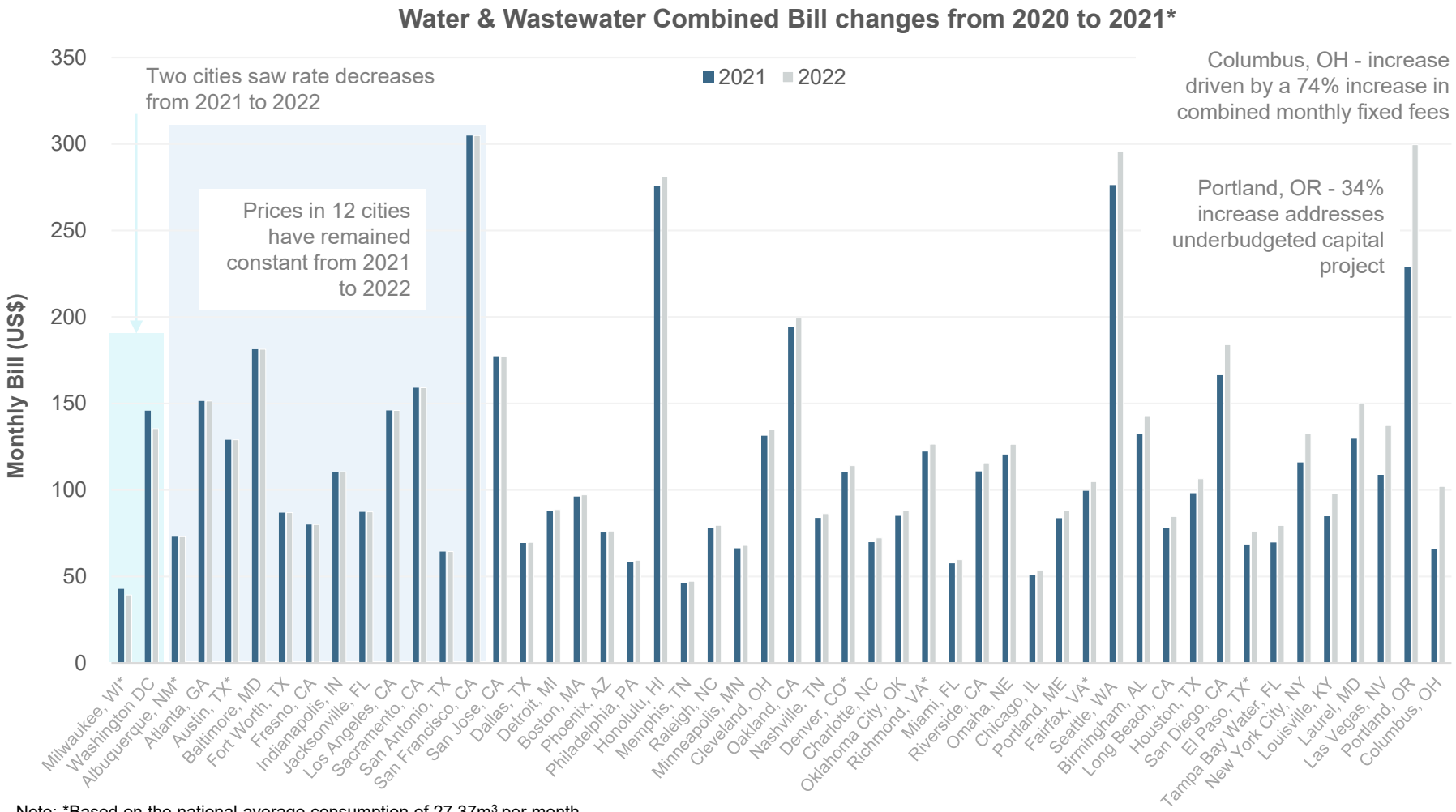
The average combined water and wastewater bill for a typical U.S. household over the 50 municipalities is US$111.60 per month.



Note: *Under consent decree to address discharge of untreated wastewater; ^Based on individual consumption rates corresponding to each municipality
Source: Bluefield Research

Changes in Household Water & Wastewater Bills, 2021-2022

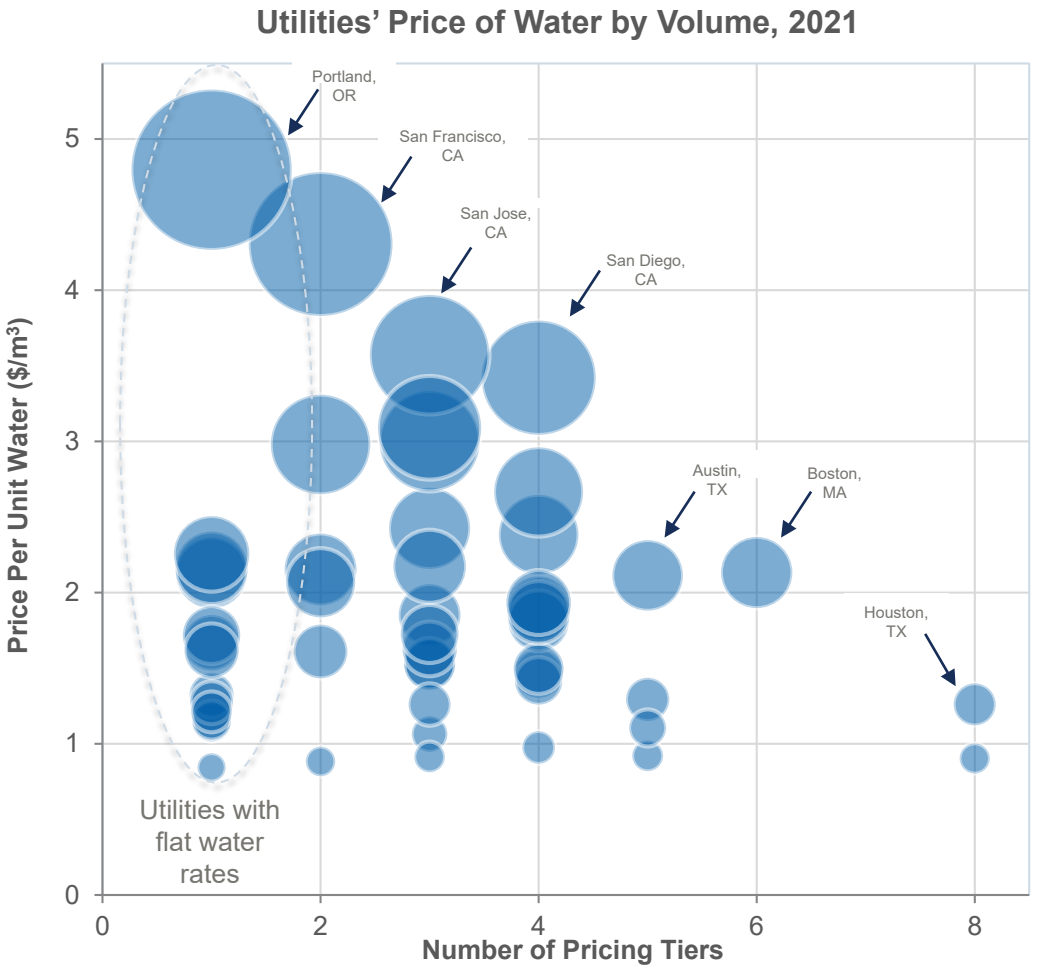
Of the top 50 U.S. cities, 37 cities have increased combined water and wastewater bills, while five have decreased combined water and wastewater bills in 2021.



Note: *Based on the national average consumption of 27.37m^3 per month
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 single-tiered 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 decreasing price structures that provide lower rates to residents who use large amounts of water.
- Some utilities include a monthly, volumetric allowance alongside fixed water rates: Nashville, TN (2CCF), Phoenix, AZ (6CCF October-May, 10CCF June-September), and Portland, ME (1CCF), Miami, FL (4 CCF), and El Paso TX (4CCF), as a means of setting a floor on revenue despite reduction in consumer demand related to improved water use efficiency.
- 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 a rate that differs 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 Wastewater Rate Increases

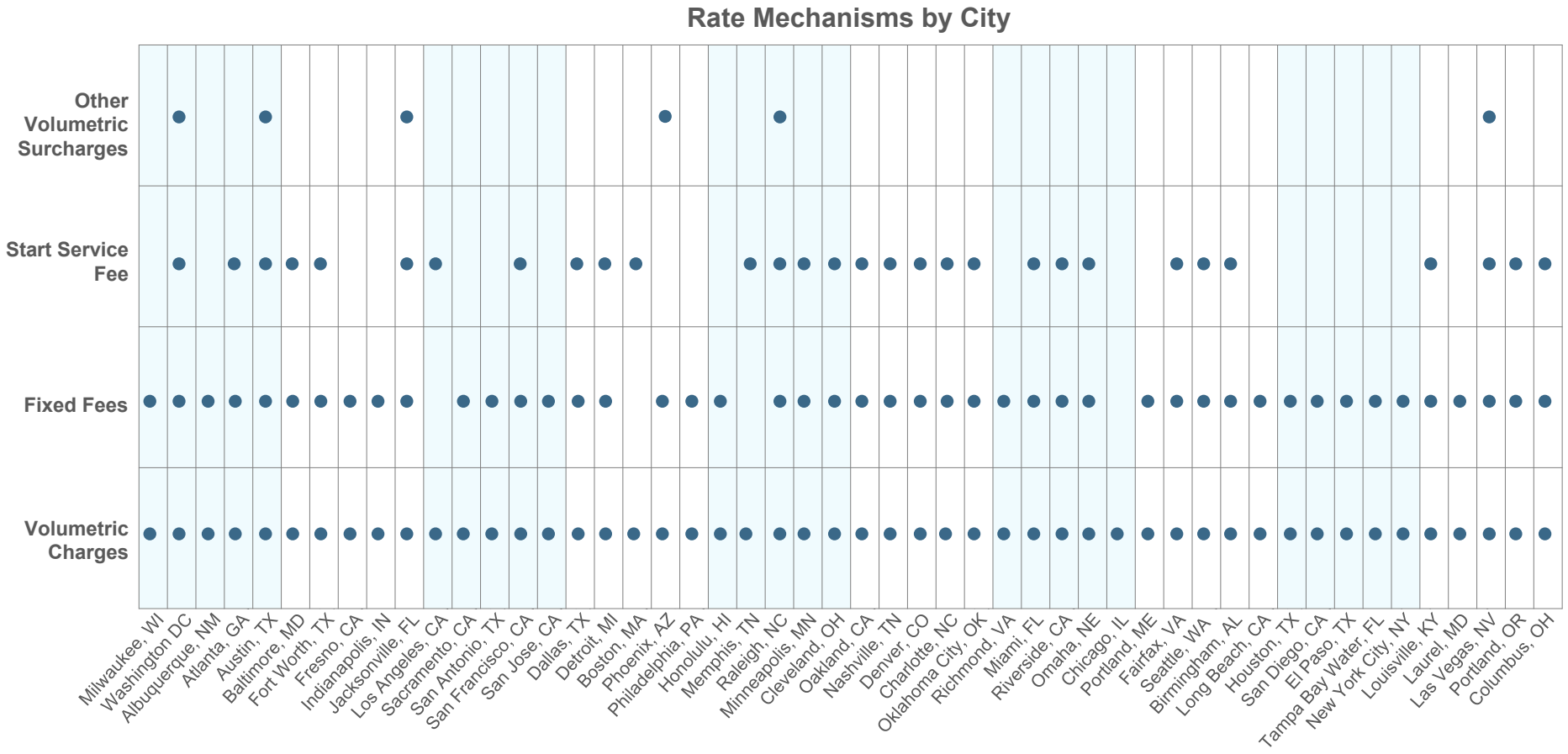
Utilities change water and wastewater rates in order to address capital improvements to infrastructure as well as increased costs associated with water treatment and distribution. Utilities may implement a range of tools to price water and wastewater for residential customers.

Mechanism	Description
Volumetric Charges	• Customers pay an amount proportional to water usage and wastewater release. Volumetric charges can be uniform across all amounts of water consumed, or they can be tied to an increasing or decreasing block tariff structure. • Range from US$0 to US$6 per centum cubic feet (CCF) within the first block tariff for water; Ranges between US$0 to US$11 per CCF within the first block tariff for wastewater. • Other volumetric surcharges may be charged to customers based on water usage or wastewater release and are used to offset environmental impacts through environmental protection fees or may be used to fund community assistance and affordability programs. • Only Washington, DC, Austin, TX, Phoenix, AZ, Raleigh, NC, and Las Vegas, NV, have volumetric surcharges, which are 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 wastewater infrastructure. In some states, the fixed fee also includes a monthly minimum charge for water usage. • Range from US$0 to US$55 for water; and US$0 to US$77 for wastewater. • Boston, Chicago, Los Angeles, and Memphis do not have a fixed fee for water and wastewater use.
Startup Service Fees	• Startup service fees are paid when customers establish an account with the water or wastewater utility and are a one-time payment. • 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 the existing water utilities' 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 wastewater. 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**

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