



# 2024 Rate Report

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Black & Veatch's 50 Largest Cities  
Water/Wastewater Rate Survey Report

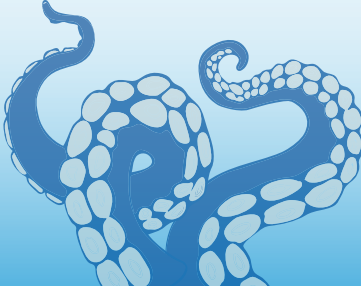
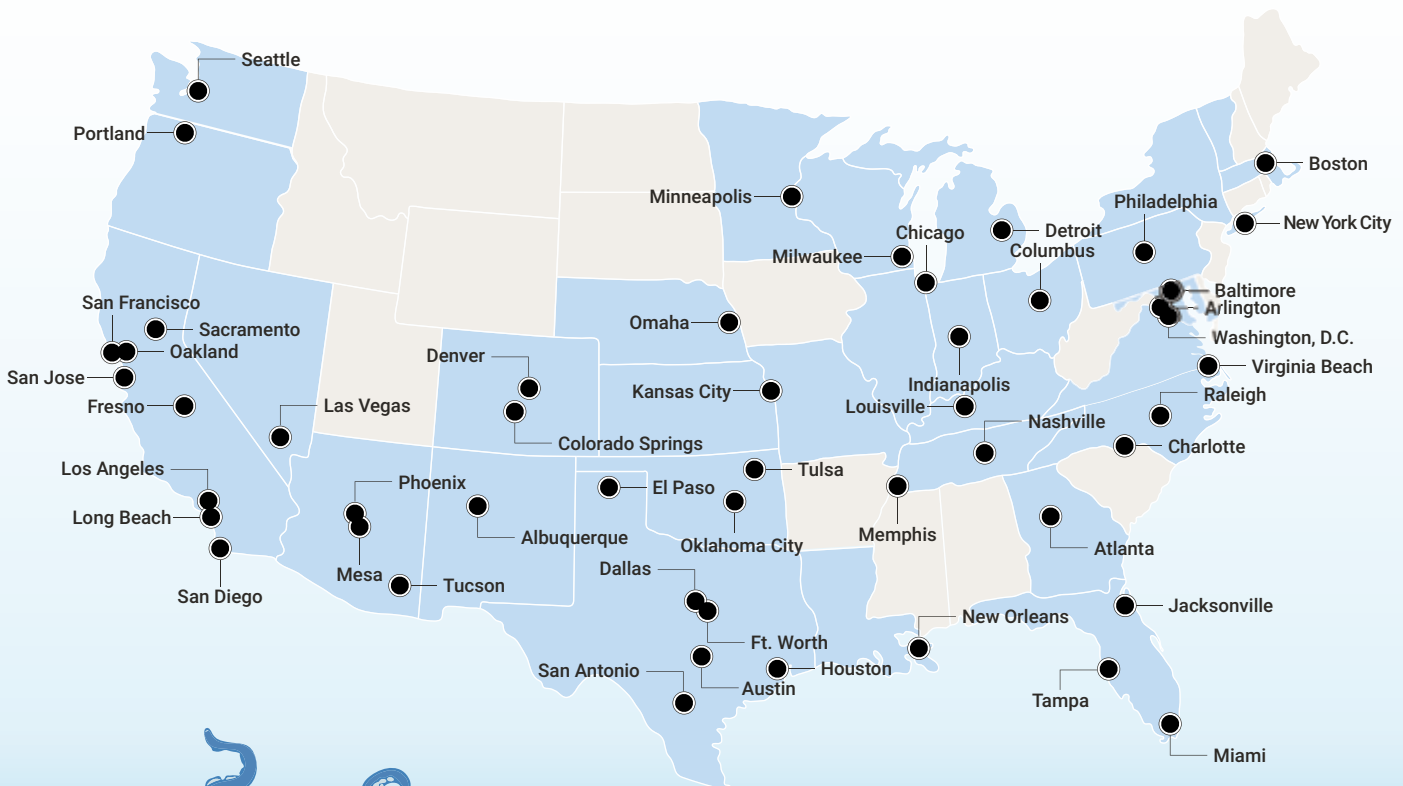
# About This Report

Get expert help for your water needs.

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For our 2024 report, we illustrate the challenge utilities face as they balance affordability with meeting the water demands of their communities. These costs often “creep” up, sometimes forming into multi-tentacled headaches for utility managers, threatening to pull their operations underwater. What better way, then, to express the ever-expanding scope of water utility demands than an elusive underwater creature from the deep? Fortunately, utilities can quell these financial headaches and guide their organizations to smoother waters through enhanced prioritization and optimization supported by an effective business case for appropriate rate increases. Armed with these new resources, utilities can continue to fulfill their mission to provide safe water and wastewater services to their communities – and keep those creeping costs at bay.

The analysis team has calculated the typical bill for various residential, commercial, and industrial user profiles based on the inputs of representatives from the 50 largest cities in the United States, as determined by population, that provide water and sewer services. Calculated bills reflect rates in effect as of 1 July 2024.



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# Introducing the 2024 50 Largest Cities Survey Report

*Since 2001, Black & Veatch has assessed water and wastewater rates among the 50 largest cities in the United States. This year's report provides our bi-annual compilation of peer benchmarking data and looks at some of the economic and affordability issues the water industry is facing.*

Year after year, [Black & Veatch's annual Water Report](#), American Water Works Association (AWWA)'s State of the Industry Report, and American Society of Civil Engineers (ASCE)'s Infrastructure Report Card rank aging infrastructure as the water industry's top concern. With the World Health Organization's official declaration that COVID is over, we are now facing the daunting challenge of handling the pandemic's aftermath: a hybrid workforce, permanent business closures, skyrocketing costs, and supply chain disruptions. For those on the financial side of the business, making the case for rate increases has never been easy. The conflux of media-grabbing headlines around failed infrastructure, lead service lines, forever chemicals, and affordability matters means more pressure to build a compelling case for rate increases that balance conflicting needs.

## **We are in a capital-intensive industry**

The passage of the Infrastructure Investment and Jobs Act (IIJA), otherwise known as the Bipartisan Infrastructure Law (BIL), is a huge boon for the water and wastewater industry. While some states are further ahead than others distributing these grants and low-interest loans, there is no question that the influx of monies is welcomed. Let's face it, the water industry is a capital-intensive business. Most assets are long-lived, and so, it has always been easy to delay reinvestment in them when times are tight. Unfortunately, recent water crises in the media are reminders why the industry can no longer kick the can down the road.

While the federal government has provided more money supporting infrastructure than in the past, as ASCE has pointed out, these funds are still not nearly enough to make up for decades of deferred investment.

## **Affordability is still a challenge**

The availability of federal infrastructure funding has not made a huge dent in addressing how to increase water affordability for economically disadvantaged portions of the population. Some programs, however, have helped; the Low-Income Household Water Assistance Program (LIHWAP), which came out during the COVID pandemic, has provided relief for low-income households. The interest in developing Customer Assistance Programs remains high. Positive movement in some state legislatures to help address the tenant-landlord challenge is a welcomed advancement for the industry. In other areas, ratemaking options, such as recovering a portion of infrastructure costs via the tax roll, are being considered.

## **The 2024 survey**

Our most recent survey examines affordability metrics that are more meaningful for utilities in developing rate structures. In this year's survey, we examine how to communicate why economic indicators in the news only reflect some of the impacts the industry experiences. The survey provides perspectives to help you build your rate case and explain to customers why utility revenue increases tend to be higher than inflation.

If you have questions regarding the contents of this report or Black & Veatch services, please do not hesitate to [contact us](#).



# Survey Observations

## Market Dynamics

Higher water and sewer bills are a reflection of several dynamics impacting the industry, including the following:

**Aging Infrastructure** represents the industry's greatest challenge. Funding infrastructure is a top priority and many utilities have developed charges specifically for capital projects or ongoing replacement and rehabilitation needs.

**Operational Costs** associated with labor, pension obligations, contract services, materials and supplies have increased at a faster pace than the CPI-U, which has driven the need to increase rates.

**Capital Funding** for water and sewer projects is increasingly scarce. Although infrastructure investment programs such as the Water Infrastructure Finance and Innovation Act; the Coronavirus Aid, Relief and Economic Security Act; and the American Rescue Plan Act are available, competition for limited dollars is very stiff, application times are lengthy, and receipt of funding dollars is not immediate.

**Regulatory Requirements** have driven the need for significant capital programs for developing new water supply sources or to comply with clean water requirements. These programs come with significant costs that have triggered rate increases. As an example, compliance with the Lead and Copper Rule is creating challenges with many agencies as they try to deal with how to pay for activities on private property.

**Pandemic Impacts** such as working from home and business closures, compounded with shutoff moratoriums, continue to impact utilities in the near-term. Historically, economic recoveries take several years, and as we are seeing, our return to "normal" is reflecting permanent changes on how we work.

# Cost of Water Services

Since 2001, typical residential water and sewer bills continue to see an increase that outpaces the rate of inflation per the Bureau of Labor & Statistics' Consumer Price Index-U (CPI-U) as shown in *Figure 1*.

To answer the question as to why water and sewer rates increase at a faster rate than inflation, we examined what inflation really means in the water industry.

## Does CPI Tell the Whole Story?

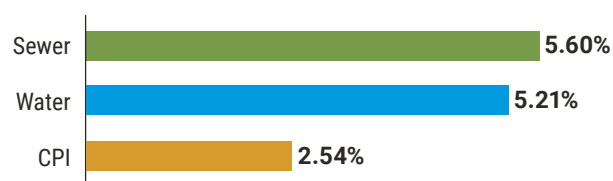
Media communications have been effective equating consumer price index (CPI) measures to inflation to the typical consumer. Unfortunately, the CPI index maybe too broad to accurately reflect the variety of costs that impact utilities. The Federal Reserve likes to use the Personal Consumption Expenditure (PCE) rate as an inflationary indicator because it looks at changes in consumer spending for goods and services. The CPI measures the change in out-of-pocket expenditures. For utilities, neither the CPI nor the CPE tell the whole story. To help utilities explain to their customers the cost trends they experience, this survey reviewed the following indices:

- **RSMeans City Cost Index (RSMeans CCI)** is used by the construction industry for creating budgets and estimating project costs. The cost books are updated annually and include data by project type and trade. The RSMeans database covers more than 950 locations and all 50 states. The US average reflects cost trends for 30 major cities.
- **Engineering News-Record (ENR) Indices** reflect a weighted aggregate of cost trends across 20-cities in the nation. ENR has used the same 20 cities in its indices for over 50 years, but users should be aware that cities from Florida and

*Figure 1*

## Compound average rate of change in surveyed typical bills (2001-2024).

To answer the question as to why water and sewer rates increase at a faster rate than inflation, we examined what inflation really means in the water industry.



Arizona are not part of the data. Moreover, ENR's indices at the city-level do not fully reflect local costs: Local prices are used for Portland cement and lumber, and the Building Cost Index (BCI) uses local wage data.

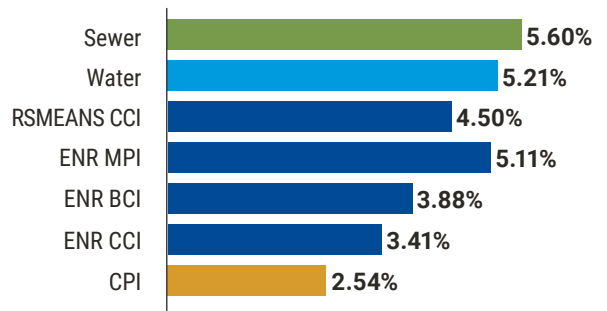
- **Construction Indices:** ENR creates a hypothetical project with four inputs (cement, lumber, structural steel, and labor) and monitors cost changes in the project in its construction indices, the CCI and BCI. The CCI is best suited when projects have a high percentage of labor costs because it is based on 200 hours of common labor multiplied by the 20-city average rate for wages and fringe benefits. In contrast, the BCI uses 68.38 hours of skilled labor multiplied by the 20-city average union wage rate (plus fringe benefits) for three specific trades (bricklayers, carpenters, and structural iron workers). The BCI is more appropriate when project costs are primarily structure related.
- **Materials Price Index (MPI):** This index reflects the changes in the materials tracked in ENR's hypothetical project – 25 hundredweight (cwt) of standard structural steel, 1.128 tons of Portland cement, and 11,088 board-ft of 2x4 lumber.

Figure 2

### Compounded average rate of change of surveyed typical bills from 2001 to 2023.

To provide some additional perspective, we examined how costs may have been affected by the pandemic.

Source: Black & Veatch



As illustrated in Figure 2, adding these indices to the comparison discussion provides additional insight into why water and sewer typical bills historically outpace the CPI by a factor of about 2.2. Utilities may wish to also consider adding the Producer Price Index (PPI) as part of their discussions. The PPI allows tracking of cost

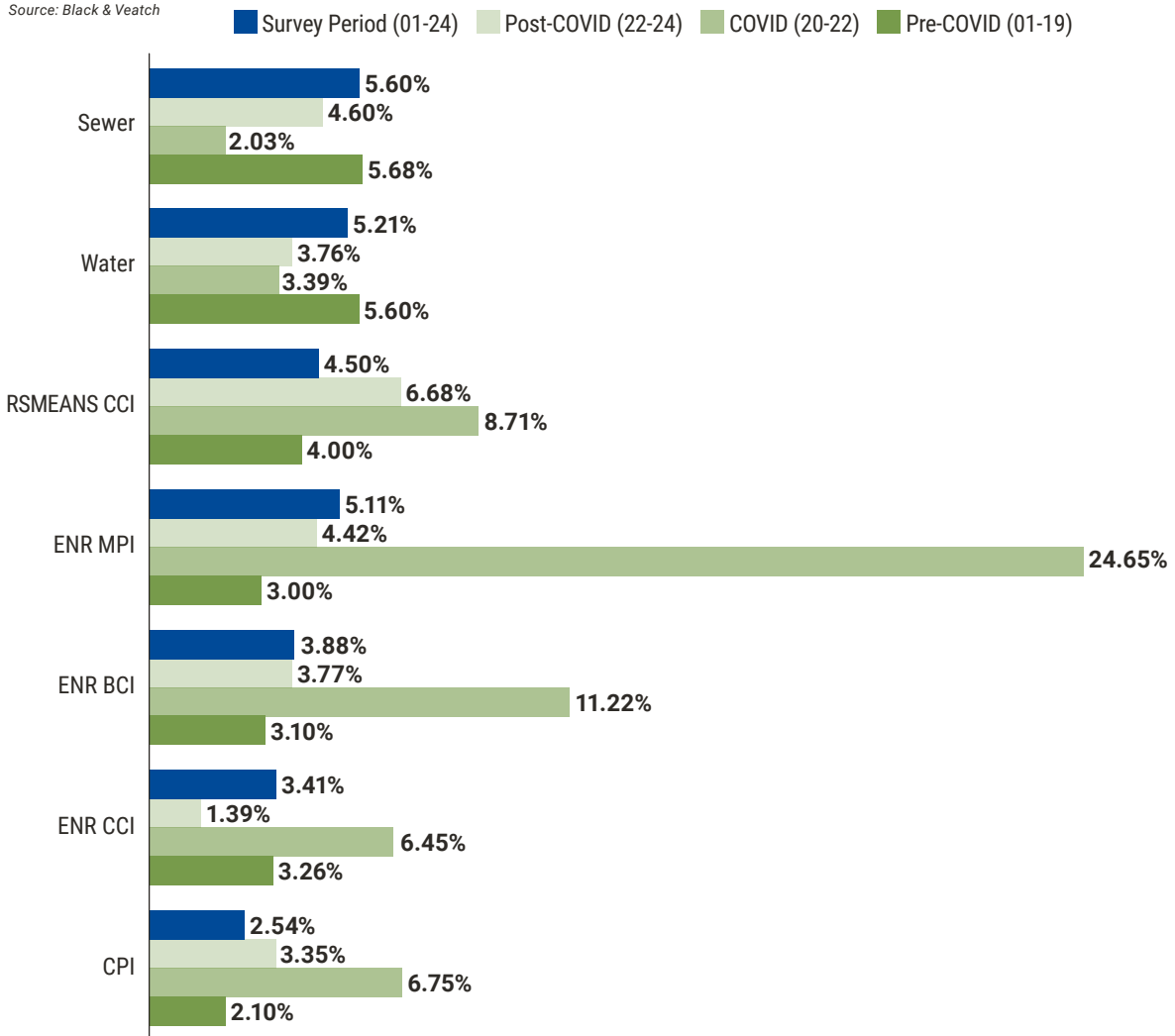
changes for specific items such as different chemicals, which play a large role in treatment operations expenses, particularly at the local level.

To provide some additional perspective, we examined how costs may have been affected by the pandemic. Figure 3 reflects the results of this analysis compared to available historical information.

Figure 3

### Compounded growth rate of water and sewer bills pre- and post-COVID compared to inflationary indices.

Source: Black & Veatch

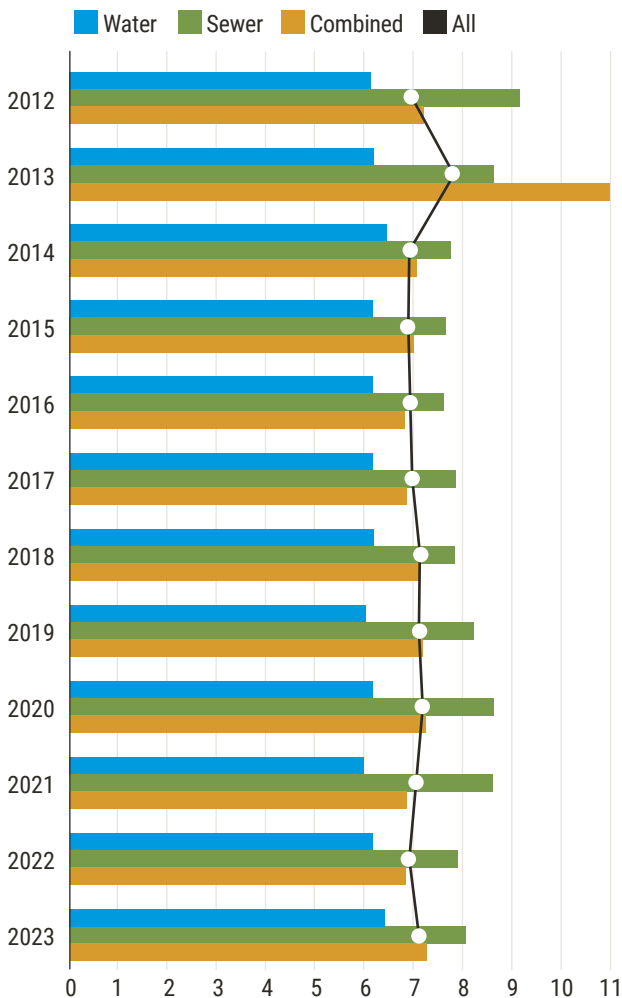


## How Does Your Utility's Capital Spend Compare to the Survey's Averages?

To replace and rehabilitate our aging infrastructure requires significant investment. Stricter U.S. Environmental Protection Agency (USEPA) compliance rules, added monitoring requirements, and modernizing technologies (e.g., treatment processes, information technology, enterprise systems) put further demands on limited funds. Electric and gas utilities spend less on capital assets per dollar of operating revenues compared to water utilities. On average, investor-owned (IOU) electric and gas utilities spend about 55% and 40%, respectively, of what an IOU water utility invests in net capital assets. Part of this difference is because water is a far more vertically integrated industry than electric or gas.

**Figure 4**  
Average net plant investment per dollar of operating revenue.

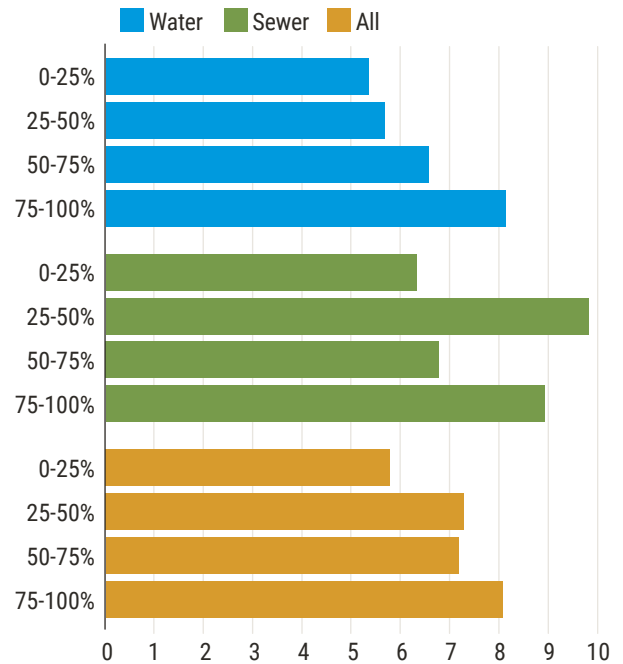
Source: Black & Veatch



**Figure 5**

## 12-year average net plant investment per dollar of operating revenues by percent of debt.

Source: Black & Veatch



In the municipal world of water, the level of net capital assets is even higher than what we see within the IOU arena. *Figure 5* illustrates the 12-year trend for water, sewer, and all utilities examined in our surveys. The analysis indicates that water utilities support \$6.43 of net capital assets for every \$1 of operating revenues over the past 12-years. Sewer utilities support 24% more at \$7.93, and all surveyed utilities average \$7.06 of net capital assets/operating revenues.

A natural question that arises when looking at these numbers is whether the level of debt incurred by a utility impacts net plant investment. *Figure 4* shows that on average, water utilities fund about 43% of capital via debt. Sewer utilities have a lower level of debt financing at 38%, and the surveyed utilities group is approximately 45% leveraged. *Figure 5* looks at the 12-year average by level of debt financing.



## Typical National Water and Sewer Typical Bill Trends

Figure 6 illustrates the trend in the average typical bill for residential customers across all 50 cities for 7,500 gallons/month of billed usage. To address conservation and declining consumption patterns across the nation, and in response to survey users, we are also highlighting Figure 7, with the same information, but at a lower usage rate of 3,750 gallons/month.

NOTE: The actual dollar impact on consumers varies by service area.

Please refer to Exhibit A for average monthly rates for residential customers at various usage levels and Exhibit B for average monthly rates for industrial and commercial customers.

Figure 6

### Trend in average typical bill for residential water and sewer customers (7,500 gallons).

Source: Black & Veatch

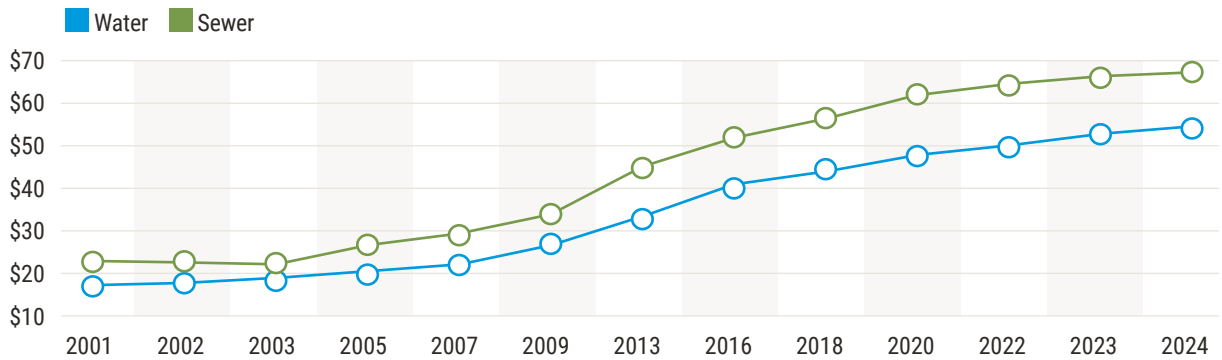
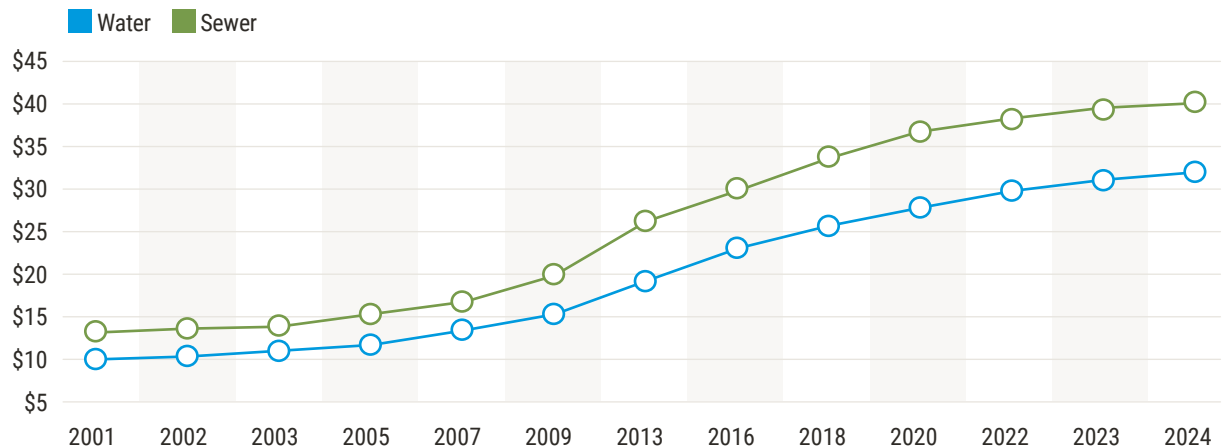


Figure 7

### Trend in average typical bill for residential water and sewer customers (3,750 gallons).

Source: Black & Veatch





## Affordability

The 2024 Survey results show that despite upward rate pressure on water and sewer services within each of the 50 cities, the national average monthly water and sewer bill for 7,500 gallons is well below the USEPA 4.5% combined bill income threshold. According to U.S. Census data, the national median household income (MHI) in 2022 was approximately \$74,149. Applying an average CPI-U rate of 6%, we calculate a 2024 median income of \$79,659, which places the average U.S. affordability target for water and sewer services at \$165.96 and \$132.76 per month, respectively. The affordability target is based on applying the average CPI-U increase and the USEPA's affordability guidelines at 2.5 percent for water and 2 percent for sewer of median income.

### Looking at the Most Disadvantaged Parts of Our Communities

When we apply this approach using the lowest household income quintile (LHIQ), most utilities still offer customers with basic use bills that are under the 4.5% combined bill threshold. However, the gap between the current bill and the threshold is narrowing compared to past years, and as usage increases, more utility bills are falling into the unaffordable category. Basic use is defined as 50 gallons/day/person in a household. For the survey, we have used the average household size for each city or MSA, and the LHIQ as reported by the U.S. Census Bureau.

*Figures 8 through 10 show the average monthly water, sewer, and combined bills for typical customers using 50 gallons/month/person (basic use) compared to each city's USEPA affordability target applied to each city's LHIQ.*

Figure 8

Typical residential water bill for basic use versus USEPA affordability target.

Source: Black & Veatch

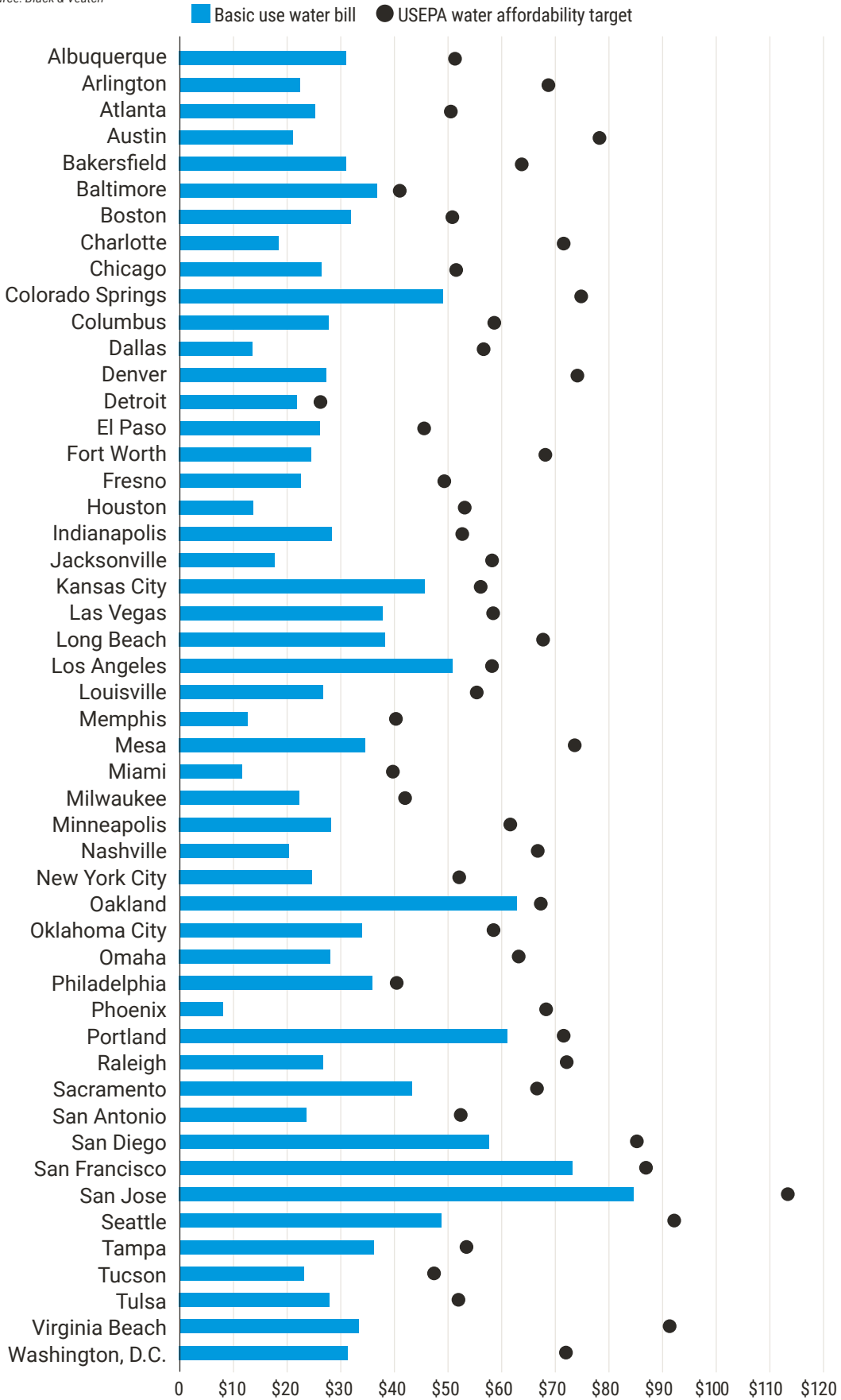


Figure 9

Typical residential sewer bill for basic use versus USEPA affordability target.

Source: Black & Veatch

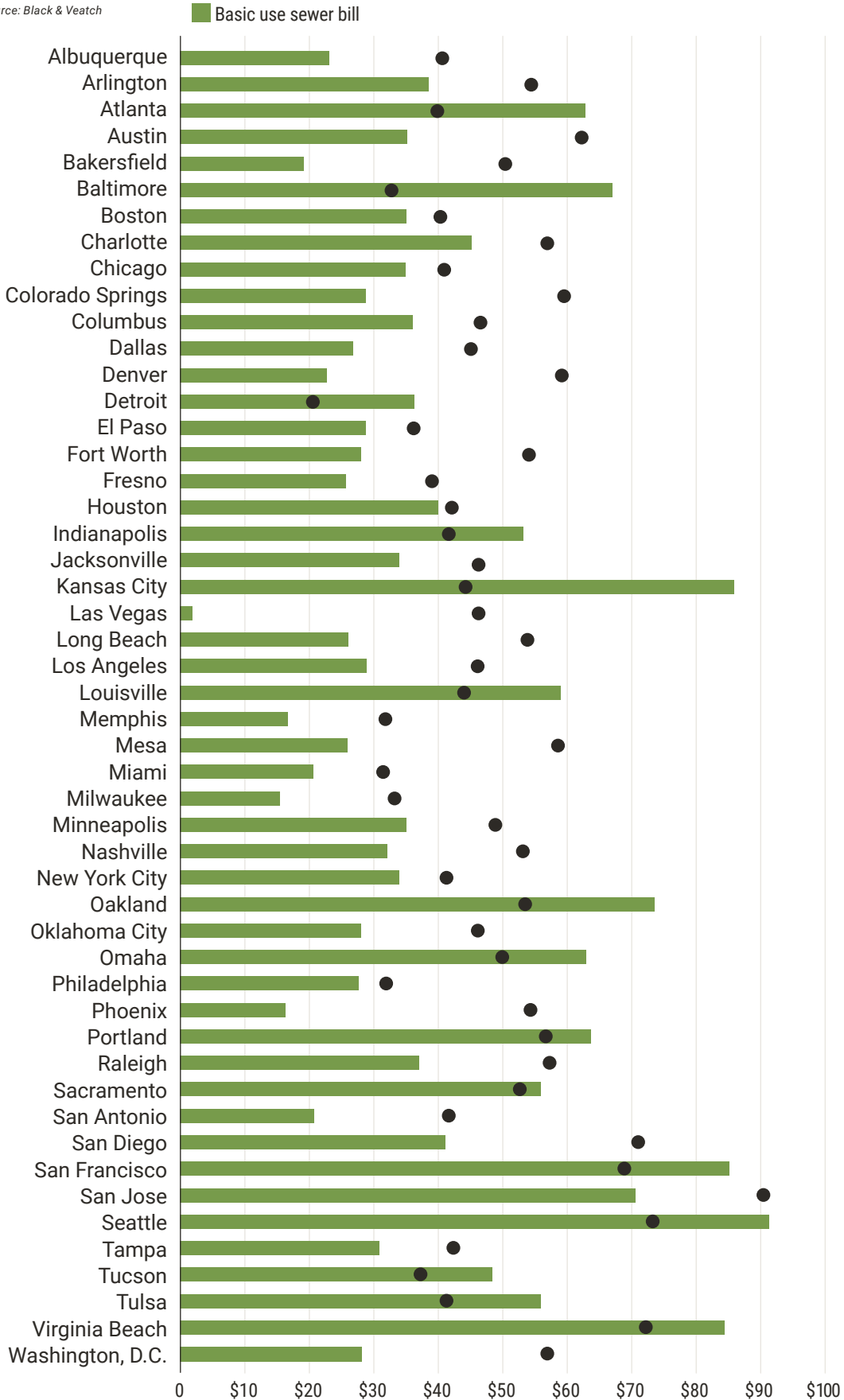


Figure 10

Typical residential combined bill for basic use versus USEPA affordability target.

Source: Black & Veatch

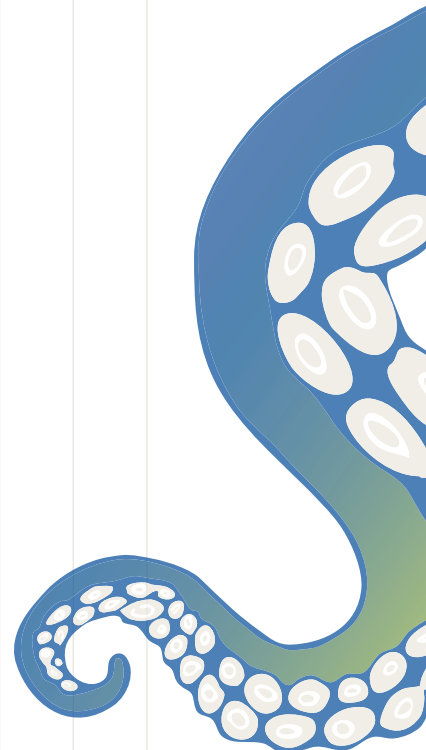
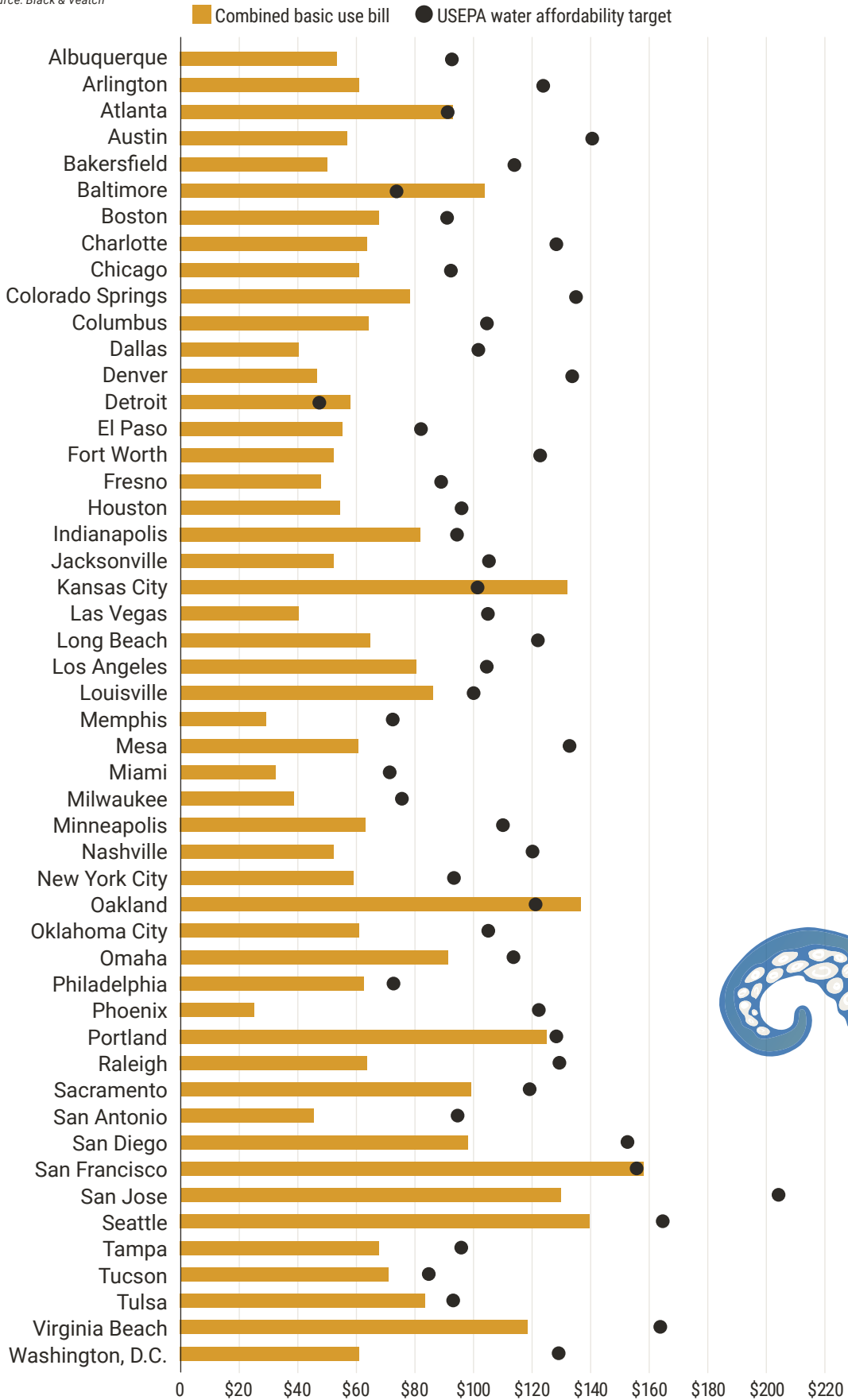
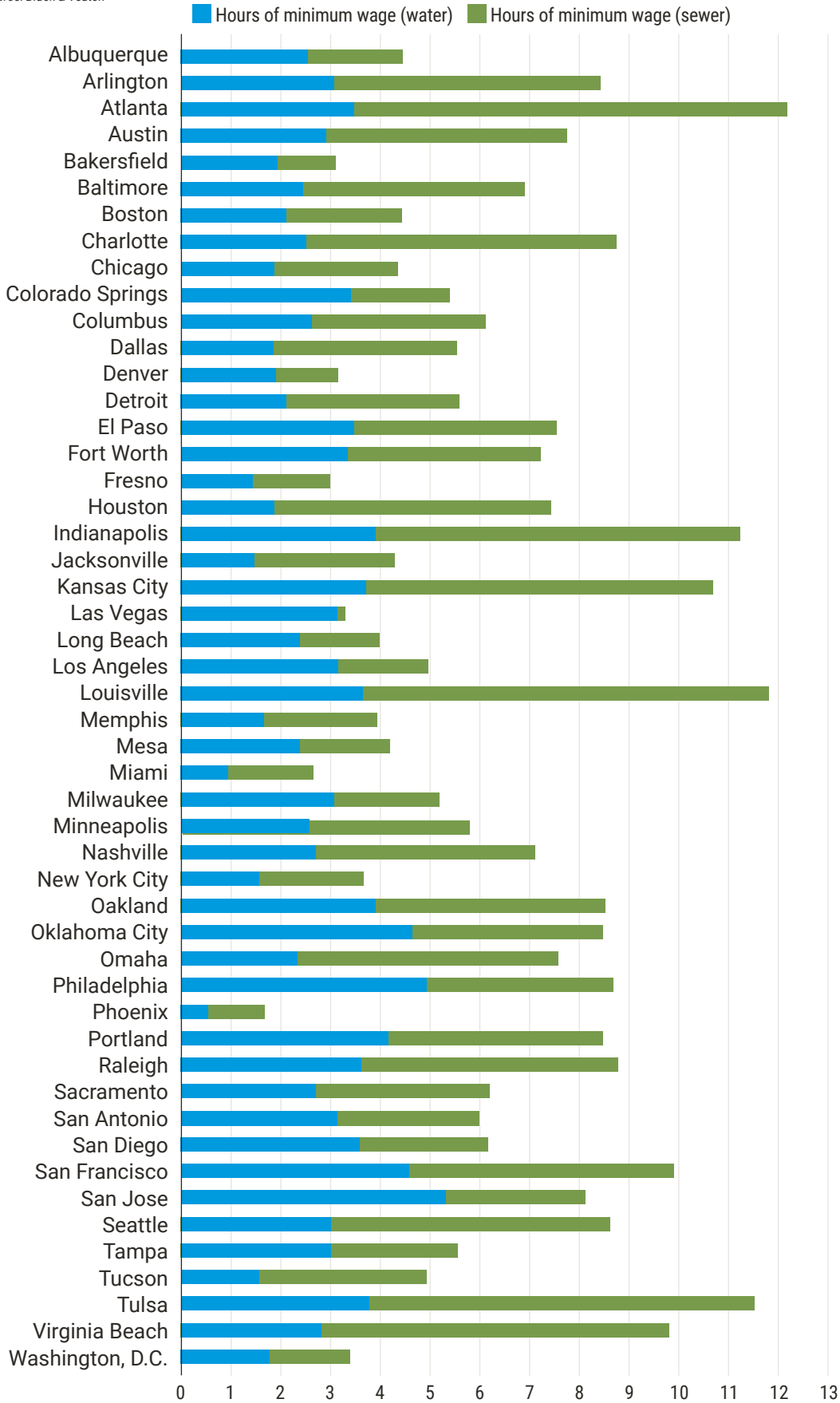


Figure 11

Hours at local minimum wage to pay combined use bill.

Source: Black & Veatch



## Breaking It Down in a Meaningful Way

Part of the problem with affordability measures is that it is difficult for people to understand what “low” or “high” means to a household facing the issue every day. Intuitively, the Hours of Minimum Wage (HMW) is one of the easiest measures to understand and communicate to stakeholders how revenue increases impact households. The HMW simply divides the basic use utility bill for a household by the prevailing minimum wage in the service area. This metric is easy to communicate but should be compared to other household costs to provide context.

Figure 11 compares the number of hours at the local minimum wage required to pay a residential bill at the basic use level.

Exhibit C presents the summary data tables by city for the affordability results described here.

## Water is Still a Better Deal Compared to Other Services

Overall, despite the increasing size of water and sewer bills, the value of water continues to be a good value compared to other households bills, as shown in Figure 12. However, customers don’t really understand that the water they drink and the wastewater that magically goes away down a drain costs less than a penny per gallon.

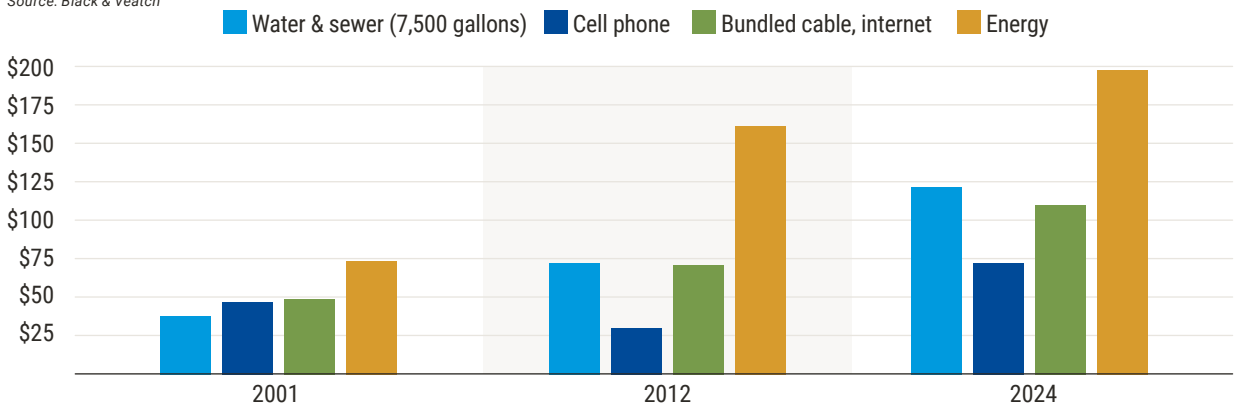
Instead, they measure value from a “what does it do for me now” lens. Daily, customers are more concerned about the speed of their internet connection or how many bars they have on their cell phone. They do not think about water and sewer service – until they lose it. As an industry, we must continue to press home that reliable access to safe, clean water is of paramount importance and that no one should ever have to experience a day without it.



Figure 12

## Average monthly, residential utility bills across the United States.

Source: Black & Veatch



# Exhibit A: Residential Water and Sewer Rates

The following graphs illustrate a typical monthly bill for residential customers under the following consumption classifications: 0 – (minimum bill);

3,750 gallons per month; 7,500 gallons per month; 15,000 gallons per month.

Figure 13

## Average residential water and sewer costs per month (0 gallons – minimum bill).

Source: Black & Veatch

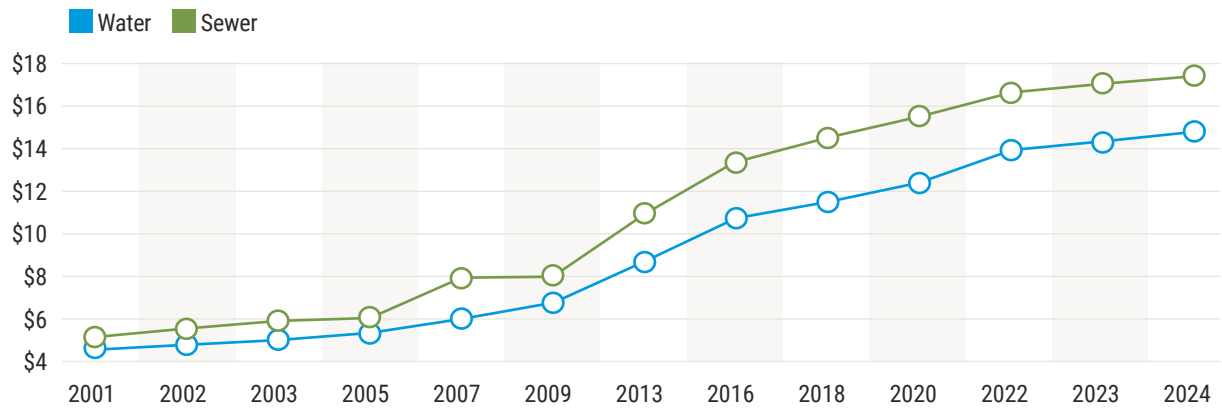


Figure 14

## Average residential water and sewer costs per month (3,750 gallons).

Source: Black & Veatch

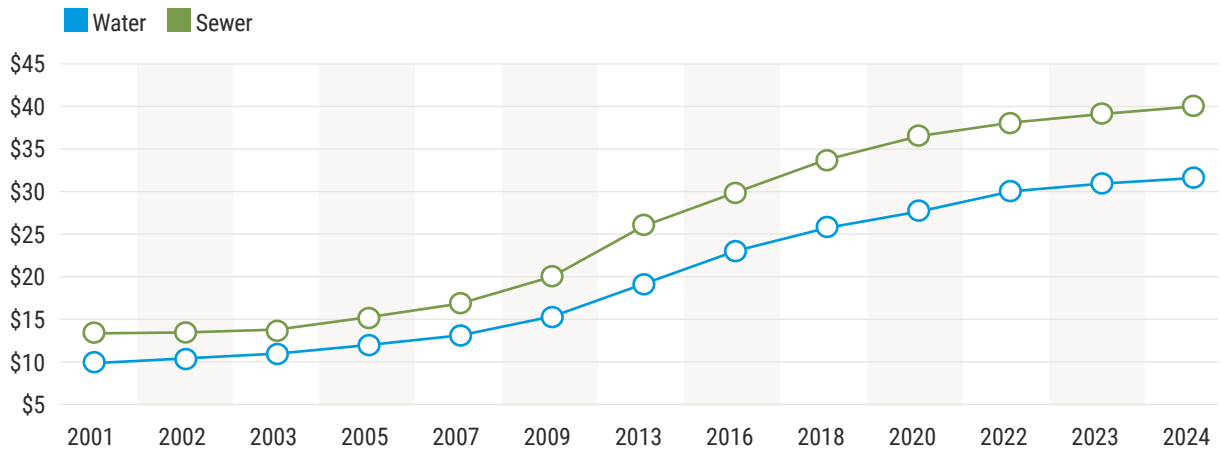




Figure 15

Average residential water and sewer costs per month (7,500 gallons).

Source: Black & Veatch

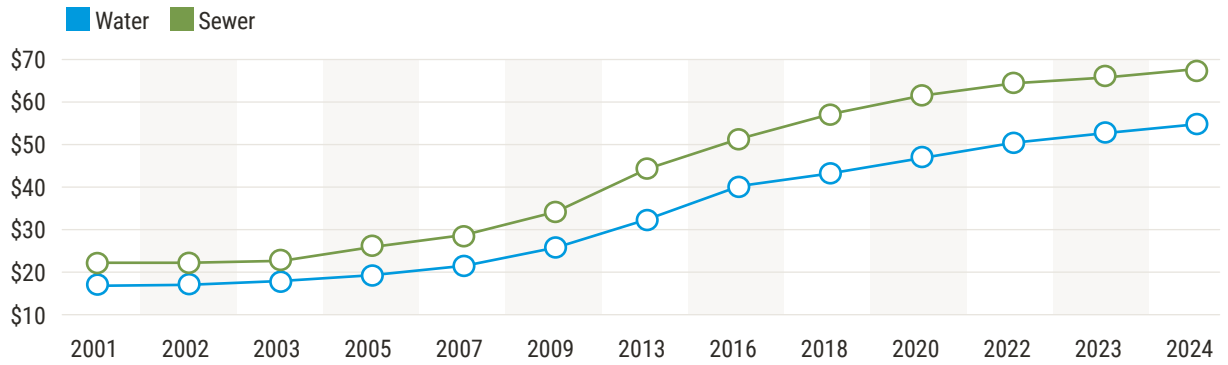
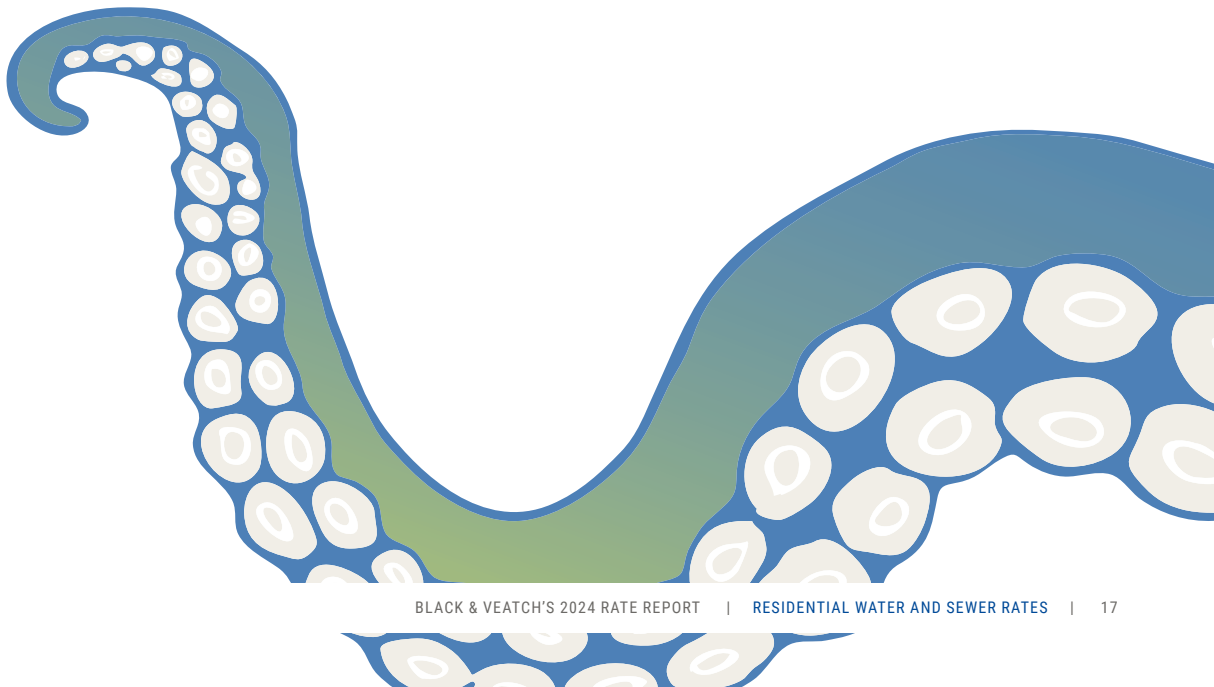
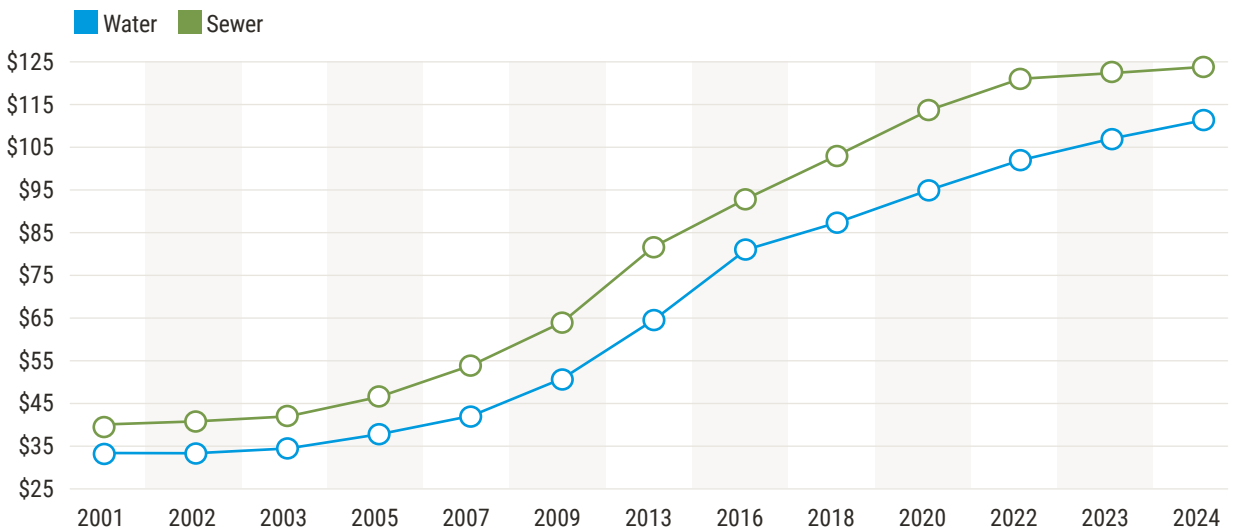


Figure 16

Average residential water and sewer costs per month (15,000 gallons).

Source: Black & Veatch



# Exhibit B: Commercial & Industrial Rates

The following graphs illustrate the typical monthly water and sewer bills for commercial customers using 100,000 gallons of water per

month and industrial customers using 10 million gallons per month.

Figure 17

Average commercial water and sewer costs per month (100,000 gallons).

Source: Black & Veatch

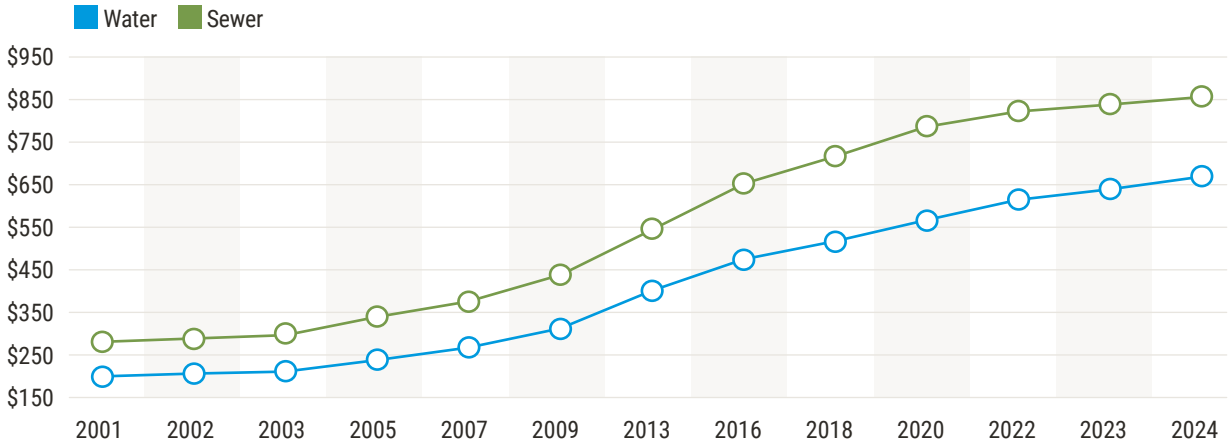
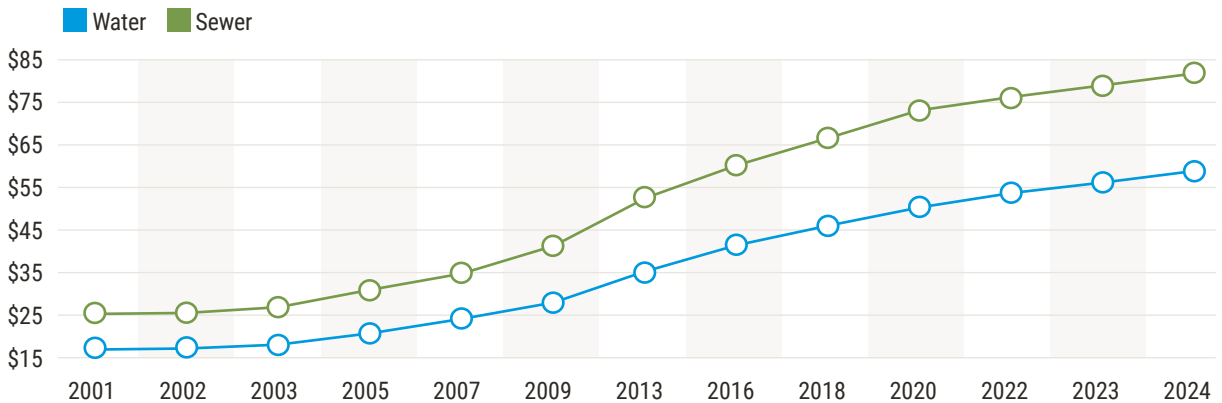


Figure 18

Average industrial water and sewer costs per month (10 million gallons).

Source: Black & Veatch





## Exhibit C: Affordability Tables

The following tables present the affordability measures for each of the survey cities.<sup>1,2</sup>

Data Sources:

<sup>1</sup> Bureau of Labor Statistics

<sup>2</sup> [Massachusetts Institute of Technology Living Wage Database for 2 working adults](#). Accessed 06/24/2024.



## Essential Household Costs by City

Ranking	50 Largest Cities	BLS Region	LQI	Housing	Utilities	Food	Healthcare	Transportation	Phone Service	Internet	Other	Taxes	Monthly Total	2024 Total	Income LESS Monthly Essentials
1	New York City	NE	\$25,041	9,526	1,855	4,558	3,811	4,297	842	509	2,595	(2,291)	\$2,142	\$2,270	(\$58)
2	Los Angeles	W	\$27,803	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$1,141)
3	Chicago	MW	\$24,680	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$498)
4	Houston	S	\$25,489	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$305)
5	Phoenix	W	\$32,752	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$703)
6	Philadelphia	NE	\$19,390	11,026	6,739	9,526	892	4,297	842	509	2,595	(2,291)	\$2,845	\$3,015	(\$1,302)
7	San Antonio	S	\$25,203	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$330)
8	San Diego	W	\$40,822	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	\$9
9	Dallas	S	\$27,119	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$161)
11	Austin	S	\$37,473	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$754
10	Jacksonville	S	\$27,942	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$88)
13	San Jose	W	\$54,440	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	\$1,212
12	Fort Worth	S	\$32,626	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$325
14	Columbus	MW	\$28,037	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$201)
15	Charlotte	S	\$34,280	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$472
16	Indianapolis	MW	\$25,241	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$448)
17	San Francisco	W	\$41,663	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	\$84
18	Seattle	W	\$44,198	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	\$308
19	Denver	W	\$35,581	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$454)
20	Oklahoma City	S	\$27,976	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$85)
21	Nashville	S	\$32,111	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$280
23	El Paso	S	\$21,781	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$633)
22	Washington DC	S	\$34,391	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$481
24	Las Vegas	W	\$27,961	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$1,127)
25	Boston	NE	\$24,316	11,026	6,739	9,526	892	4,297	842	509	2,595	(2,291)	\$2,845	\$3,015	(\$867)
27	Portland	W	\$34,245	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$572)
28	Louisville	S	\$26,548	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$211)
29	Memphis	S	\$19,241	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$857)
26	Detroit	MW	\$12,475	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$1,576)
30	Baltimore	S	\$19,729	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$814)
31	Milwaukee	MW	\$20,009	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$910)
32	Albuquerque	W	\$24,601	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$1,423)
33	Tucson	W	\$22,758	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$1,586)
34	Fresno	W	\$23,642	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$1,508)
35	Sacramento	W	\$31,769	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$790)
36	Mesa	W	\$35,304	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$478)
38	Kansas City	MW	\$26,759	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$314)
37	Atlanta	S	\$24,235	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$416)
39	Colorado Springs	W	\$35,848	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$430)
40	Omaha	MW	\$30,170	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$13)
41	Raleigh	S	\$34,513	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$492
43	Virginia Beach	S	\$43,661	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$1,300
44	Long Beach	W	\$32,396	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$735)
42	Miami	S	\$19,070	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$872)
45	Oakland	W	\$32,292	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$744)
46	Minneapolis	MW	\$29,405	11,059	6,345	6,857	723	4,175	692	359	2,229	(2,125)	\$2,526	\$2,678	(\$80)
48	Tulsa	S	\$24,846	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$362)
47	Bakersfield	W	\$30,440	12,767	7,186	11,221	928	6,056	827	540	3,528	(2,337)	\$3,393	\$3,597	(\$908)
49	Tampa	S	\$25,569	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	(\$298)
50	Arlington	S	\$32,907	11,581	5,605	5,597	760	4,270	679	366	2,021	(1,938)	\$2,412	\$2,557	\$350

## Affordability Measures by City

Ranking	50 Largest Cities	Population	2024 Median Income	2024 Household Income - Lowest Quintile	% Population Below 200% of FPL - 5 yr	Average Household Size	Monthly LQHI Less Essential Costs	Basic Use Water & Sewer Bill	Household Burden Indicator	HBI and PPI Affordability Burden	Affordability Ratio	Hours of Minimum Wage
1	New York City	8,258,035	\$81,204	\$26,544	34.1%	2.56	(\$58.37)	\$58.65	2.65%	Moderate-Low	-100.48%	3.67
2	Los Angeles	3,820,914	\$80,820	\$29,472	35.7%	2.70	(\$1,140.63)	\$79.56	3.24%	Moderate-High	-6.97%	4.97
3	Chicago	2,664,452	\$75,974	\$26,161	34.3%	2.36	(\$497.63)	\$61.06	2.80%	Moderate-High	-12.27%	4.36
4	Houston	2,314,157	\$64,067	\$27,019	41.3%	2.52	(\$305.01)	\$53.87	2.39%	Moderate-High	-17.66%	7.43
5	Phoenix	1,650,070	\$76,419	\$34,718	34.4%	2.68	(\$703.47)	\$24.37	0.84%	Moderate-High	-3.46%	1.70
6	Philadelphia	1,550,542	\$60,990	\$20,554	42.4%	2.34	(\$1,302.43)	\$63.05	3.68%	Moderate-High	-4.84%	8.70
7	San Antonio	1,495,295	\$63,169	\$26,716	39.5%	2.62	(\$330.28)	\$43.67	1.96%	Moderate-High	-13.22%	6.02
8	San Diego	1,388,320	\$104,578	\$43,272	24.7%	2.59	\$9.39	\$98.66	2.74%	Moderate-Low	1050.36%	6.17
9	Dallas	1,302,868	\$67,825	\$28,747	40.0%	2.46	(\$161.03)	\$40.32	1.68%	Moderate-High	-25.04%	5.56
10	Jacksonville	985,843	\$67,987	\$29,619	34.0%	2.47	(\$88.33)	\$51.55	2.09%	Moderate-Low	-58.37%	4.30
11	Austin	979,882	\$91,751	\$39,722	26.1%	2.21	\$753.59	\$56.17	1.70%	Moderate-Low	7.45%	7.75
12	Fort Worth	978,468	\$77,091	\$34,584	32.6%	2.78	\$325.43	\$52.41	1.82%	Moderate-Low	16.11%	7.23
13	San Jose	969,655	\$144,173	\$57,707	18.4%	3.03	\$1,212.33	\$130.09	2.71%	Low	10.73%	8.13
14	Columbus	913,175	\$66,775	\$29,720	36.4%	2.30	(\$201.09)	\$63.82	2.58%	Moderate-High	-31.74%	6.11
15	Charlotte	911,311	\$78,515	\$36,337	28.5%	2.43	\$471.54	\$63.45	2.10%	Moderate-Low	13.46%	8.75
16	Indianapolis	879,293	\$62,657	\$26,756	36.2%	2.43	(\$448.08)	\$81.56	3.66%	Moderate-High	-18.20%	11.25
17	San Francisco	808,988	\$144,892	\$44,163	20.7%	2.29	\$83.68	\$158.59	4.31%	Moderate-Low	189.51%	9.91
18	Seattle	755,078	\$123,034	\$46,851	18.4%	2.05	\$307.61	\$140.41	3.60%	Moderate-Low	45.65%	8.62
19	Denver	716,577	\$91,005	\$37,716	25.6%	2.15	(\$453.57)	\$45.84	1.46%	Moderate-Low	-10.11%	3.18
20	Oklahoma City	702,767	\$68,107	\$29,655	34.7%	2.47	(\$85.32)	\$61.59	2.49%	Moderate-Low	-72.19%	8.50
21	Nashville	687,788	\$75,609	\$34,038	30.8%	2.27	\$279.94	\$51.71	1.82%	Moderate-Low	18.47%	7.13
22	Washington DC	678,972	\$107,827	\$36,455	25.4%	2.03	\$481.34	\$59.60	1.96%	Moderate-High	12.38%	3.41
23	El Paso	678,958	\$59,053	\$23,088	43.4%	2.80	(\$632.56)	\$54.61	2.84%	Moderate-High	-8.63%	7.53
24	Las Vegas	660,929	\$70,338	\$29,639	34.6%	2.65	(\$1,126.68)	\$39.76	1.61%	Moderate-Low	-3.53%	3.31
25	Boston	653,833	\$94,566	\$25,775	31.2%	2.26	(\$867.29)	\$66.85	3.11%	Moderate-Low	-7.71%	4.46
26	Detroit	633,218	\$40,027	\$13,224	56.1%	2.50	(\$1,575.76)	\$57.76	5.24%	Moderate-High	-3.67%	5.59
27	Portland	630,498	\$91,030	\$36,300	26.0%	2.21	(\$571.58)	\$124.81	4.13%	Moderate-High	-21.84%	8.49
28	Louisville	622,981	\$66,902	\$28,141	32.7%	2.36	(\$211.47)	\$85.74	3.66%	Moderate-Low	-40.55%	11.83
29	Memphis	618,639	\$50,976	\$20,396	47.3%	2.45	(\$856.93)	\$28.62	1.68%	Moderate-High	-3.34%	3.95
30	Baltimore	565,239	\$61,851	\$20,913	37.6%	2.28	(\$813.82)	\$103.67	5.95%	Moderate-High	-12.74%	6.91
31	Milwaukee	561,385	\$52,718	\$21,210	48.1%	2.42	(\$910.24)	\$37.71	2.13%	Moderate-High	-4.14%	5.20
32	Albuquerque	560,274	\$65,194	\$26,077	34.6%	2.32	(\$1,423.48)	\$53.62	2.47%	Moderate-Low	-3.77%	4.47
33	Tucson	547,239	\$55,173	\$24,124	42.9%	2.34	(\$1,586.28)	\$70.98	3.53%	Moderate-High	-4.47%	4.95
34	Fresno	545,716	\$66,782	\$25,061	44.2%	2.99	(\$1,508.19)	\$48.03	2.30%	Moderate-High	-3.18%	3.00
35	Sacramento	526,384	\$83,692	\$33,676	32.5%	2.62	(\$790.30)	\$99.07	3.53%	Moderate-Low	-12.54%	6.19
36	Mesa	511,648	\$78,193	\$37,423	28.6%	2.58	(\$478.04)	\$60.12	1.93%	Moderate-Low	-12.58%	4.19
37	Atlanta	510,823	\$82,315	\$25,689	33.7%	2.03	(\$415.78)	\$88.23	4.12%	Moderate-Low	-21.22%	12.17
38	Kansas City	510,704	\$69,172	\$28,365	33.4%	2.30	(\$313.99)	\$131.52	5.56%	Moderate-Low	-41.89%	10.69
39	Colorado Springs	488,664	\$83,769	\$37,999	25.9%	2.44	(\$429.98)	\$77.91	2.46%	Moderate-Low	-18.12%	5.40
40	Omaha	483,335	\$74,415	\$31,981	29.6%	2.41	(\$12.68)	\$91.07	3.42%	Moderate-Low	-718.38%	7.59
41	Raleigh	482,295	\$83,350	\$36,584	26.8%	2.35	\$492.12	\$63.62	2.09%	Moderate-Low	12.93%	8.78
42	Miami	455,924	\$58,150	\$20,214	43.3%	2.33	(\$872.03)	\$31.83	1.89%	Moderate-High	-3.65%	2.65
43	Virginia Beach	453,649	\$92,798	\$46,281	20.4%	2.51	\$1,300.20	\$117.80	3.05%	Moderate-Low	9.06%	9.82
44	Long Beach	449,468	\$83,736	\$34,340	32.7%	2.65	(\$734.91)	\$64.22	2.24%	Moderate-Low	-8.74%	4.01
45	Oakland	436,504	\$100,054	\$34,230	29.2%	2.53	(\$744.10)	\$136.46	4.78%	Moderate-High	-18.34%	8.53
46	Minneapolis	425,115	\$80,913	\$31,170	32.3%	2.20	(\$80.25)	\$62.99	2.43%	Moderate-Low	-78.49%	5.81
47	Bakersfield	413,381	\$78,258	\$32,267	36.9%	3.20	(\$907.70)	\$49.81	1.85%	Moderate-High	-5.49%	3.11
48	Tulsa	411,894	\$60,048	\$26,337	39.7%	2.38	(\$361.81)	\$83.49	3.80%	Moderate-Low	-23.07%	11.52
49	Tampa	403,364	\$70,811	\$27,104	33.9%	2.38	(\$297.95)	\$67.08	2.97%	Moderate-High	-22.51%	5.59
50	Arlington	398,431	\$76,041	\$34,882	32.2%	2.82	\$350.25	\$61.12	2.10%	Moderate-Low	17.45%	8.43

# About the Authors



## Analysis Team

Black & Veatch provides integrated strategy, resource planning, and digital infrastructure platform solutions for our clients. Our seasoned executives and analysts combine advanced analytics and practical business sense with technology and engineering capabilities to deliver solutions that work best for your organization, your assets, and your customers.

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Ann has more than 30 years of experience with clients in North and South America, Europe, and Asia, and worked on over 500 engagements for commercial companies, financial institutions, governmental agencies, and public/investor-owned utilities of all sizes.

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