



MEMORANDUM

TO: Mayor and Council Members

CC: Spencer Cronk, City Manager
Elaine Hart, Deputy Assistant City Manager
Jim Smith, Interim Assistant City Manager, Infrastructure Services

FROM: Greg Meszaros, Director, Austin Water
Sam Angoori, P.E., Interim Director, Austin Resource Recovery

DATE: December 10, 2018

SUBJECT: **MMAC: Response to Council Resolution 20180201-068 (AW and ARR benchmarking study) – CIUR 1997**

The purpose of this memo is to provide you the benchmarking studies for Austin Water and Austin Resource Recovery, as directed by City Council Resolution No. 20180201-068.

The resolution directed the City Manager to provide information about internal benchmarks that the City of Austin's utilities conduct when assessing affordability and sustainability of the utilities' services to customers. The City Manager was further directed to conduct a comprehensive, data-driven benchmarking study of public, and where available, private, water and solid waste utilities in Texas that includes contextual information, where useful, such as efforts relating to sustainability, zero waster commitments, landfill diversion goals, conservation and drought mitigation efforts, the value of water, the source of water, purity standards, climate and other components the City Manager deems appropriate.

Finally, the resolution directed the City Manager to utilize the findings of this review to make recommendations for how to continue the utilities' evaluations with regard to affordability, as well as strategies for effectively communicating these ongoing efforts to customers, and how affordability goals may be reasonably determined, applied, tracked and disclosed.

Please find attached the final benchmarking studies for Austin Water and Austin Resource Recovery.



Austin Water Affordability Benchmarking Study

December 4, 2018

Austin Water

Affordability Benchmark Study

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Austin Water

Affordability Benchmark Study

Executive Summary

Project Summary

Austin Water initiated the Austin Water Affordability Benchmark Study in response to City Council Resolution No. 20180201-068, which directed the City Manager to:

- Provide Council with information about current internal benchmarks the City of Austin utilities (Austin Water and Austin Resource Recovery) use to assess affordability and sustainability of utility services to customers;
- Conduct a comprehensive, data-driven affordability benchmarking study for these two utilities as compared with other Texas cities, and also includes contextual information to better compare the differences between utilities; and
- Make recommendations on how to continue the utilities' evaluations with regard to affordability, how to effectively communicate these ongoing efforts, and how affordability goals may be reasonably determined, applied, tracked, and disclosed.

To conduct the study, Austin Water assembled an internal team which included members of Financial Services and Environmental Affairs and Conservation Program Areas. The Utility also contracted for services from NewGen Strategies and Solutions. The study team considered benchmark data from major Texas cities, central Texas cities, and major national cities similar to Austin. The team also compiled significant contextual information on these cities, including demographics, system characteristics, financial, rate structures, conservation programs, and customer assistance programs. As part of the study, Austin Water has developed affordability benchmark recommendations for implementation and continued evaluation.

Industry Trends

Across the country, the cost of water services is rising faster than any other utility service due, in large part, to the need to maintain and replace aging water and sewer infrastructure. With this increasing cost trend, utilities must balance the need for continued investment in their water systems with ensuring that basic levels of water and wastewater service remain affordable for customers.

Background

By many measures Austin Water ranks among higher cost utilities. There are a number of reasons for this. One, consistent with the national pattern mentioned above, is maintaining and replacing aging infrastructure. Added to that, for Austin Water, is the cost of keeping up with growth. Many cities, such as San Antonio, use primarily ground water. Surface water is generally much more expensive to capture and treat than ground water. Ground water generally requires only filtering and disinfection, which means significantly less cost than treating surface water.

Additionally, Austin Water includes lime softening in its water treatment processes. This produces a high-quality water for our customers but adds costs to the treatment process. Also, Austin's hilly terrain and variations in elevation require additional pumping and storage facilities to provide water to our customers. This also increases costs in providing water services.

Another cost driver is meeting community values, specifically social equity and environmental values -- which Austin Water enthusiastically embraces.

Rate Structure Reflects both Social Equity and Environmental Values

Austin Water's rates for residential customers reflect both the City's environmental and social equity values. Austin Water's residential rates are built around the principle that water is essential to life. This principle is reflected in the residential rate structure, in which usage at lower levels is charged at a lower per 1,000 gallon rate than at higher levels of usage – an inclining block, conservation-oriented rate structure. This provides a significant conservation incentive, but also results in higher rates than many other utilities for water users in the upper tiers.

Additionally, given that water is essential to life, Austin Water waives fixed fees for qualifying low-income customers and provides even lower per 1,000 gallon rates in the lower level tiers. This is done through the Customer Assistance Program (CAP). (see chart below for more on CAP rates)

Impacts of the Drought and Water Conservation

Another factor affecting all aspects of Austin Water was the recent drought, from 2008 through 2016. During this period Austin Water experienced serious financial stress. Due to steps taken during the drought, however, the utility came out of the drought in a stronger financial position.

Beginning in 2007, before the drought, Austin Water strengthened and expanded its conservation program, at the direction of the City Council. Austin residents responded resoundingly to Austin Water's calls for conservation, and per capita usage has dropped by 35% since 2006. Also, Austin uses less water now than it did at the turn of the century despite having added around 300,000 residents.

These conservation gains were essential to protect Austin's water supply given the drought. The lakes would have sunk to the lowest levels ever without Austin's conservation efforts. And, Austin Water considers consolidating the conservation gains as essential going forward given the challenges climate change is projected to bring to the region.

Reductions in water usage, however, meant decreased revenue for Austin Water. This situation was accentuated by two factors: 1) Water utilities, in general, have relatively high fixed costs; and 2) Austin Water's residential rate structure at the time recovered very little of its costs through fixed charges. When water use drops, utilities must either increase rates or cut costs. In recent years, Austin has done both.

Ultimately, a combination of strategies and policy changes during the drought resulted in Austin Water emerging from the drought in a strengthened financial position.

Austin Water made a variety of cuts, most notably a \$30 million reduction in expenses in FY 2015.

The Utility had significant rate increases as well, including a 10.2% increase for the average residential customer in FY 2015, composed of a water increase of 18.7% and a wastewater increase of 2.9%. Further, it implemented a new tiered fixed charge that increases with water consumption to improve fixed cost recovery in the face of declining consumption.

Then in 2014 the Council stopped discounting Capital Recovery Fees. Up until then the City had discounted Capital Recovery Fees in different parts of the Desired Development Zone. After review by the Impact Fee Advisory Board and the Joint Committee on Austin Water's Financial Plan (a group appointed by Council to help find ways to strengthen Austin Water's financial position) it was recommended to Council to charge the full amount allowed under state law. Over time, the increased revenue from Capital Recovery Fees has been instrumental in Austin Water being able to pay down debt (i.e., make significant defeasances of bond debt).

As a result of these combined actions, Austin Water was able to stabilize its finances and offer an average 4.8% rate decrease for all retail customers effective May 1, 2018.

The LCRA Trigger

A long-standing Austin Water major initiative with historic financial and water supply impact was the 1999 contractual agreement with the Lower Colorado River Authority (LCRA). Austin Water paid \$100 million to secure an additional 75,000 acre feet of water and to prepay for the reservation fee. This contract provided for a firm water availability of 325,000 acre feet per year through the year 2100 for the citizens of Austin. That's more than double what the City is using today.

The \$100 million payment was included in Austin Water's bond debt. At the same time the agreement included a conservation provision that is saving money for the citizens of Austin. This provision is commonly called the LCRA trigger. The trigger provision states that Austin Water does not have to pay LCRA for any water until the City's water usage reaches a trigger amount of an average of 201,000 acre feet over two consecutive twelve month periods. Once Austin Water hits the trigger, the utility would have to initiate annual payments for water above 150,000 acre feet. This would mean rate increases for Austin Water customers. Originally it was predicted that Austin would reach the trigger around 2022. Due to conservation successes, however, Austin is now not expected to hit the trigger until the late 2030s, saving Austin Water ratepayers millions of dollars.

Conserving Water and Protecting the Environment

Despite cost cutting, delaying the LCRA trigger and the recent rate decrease, Austin Water's rates still rank among the higher rates – including among major Texas cities. Some of the fundamental reasons for this are the need to accommodate growth and maintaining policies and programs that reflect community values. In addition to conservation, Austin Water oversees a number of efforts to protect the environment and water supply, and respond to climate change. These measures add to costs, but also reflect the values of Austin Water and the Austin community; values which include:

- Managing more than 43,000 acres of wildlands for endangered species and water quality protection;
- Reducing the carbon footprint by using energy produced through renewable sources such as wind and solar;
- Using methane from the Hornsby Bend Sludge Treatment Facility to create electricity to power the plant and put renewable energy onto the grid; and
- Using hybrid vehicles when available.

Customer Assistance Program Over the Years

As noted earlier, Austin Water’s rate structure reflects both Austin’s environmental and social equity and values. The utility’s Customer Assistance Program is an example of its commitment to social equity. In Figure ES – 1 below, the historical CAP customer water and wastewater bills are presented. The CAP program was initiated in 2009. The chart reflects enhancements in the CAP program over the years.

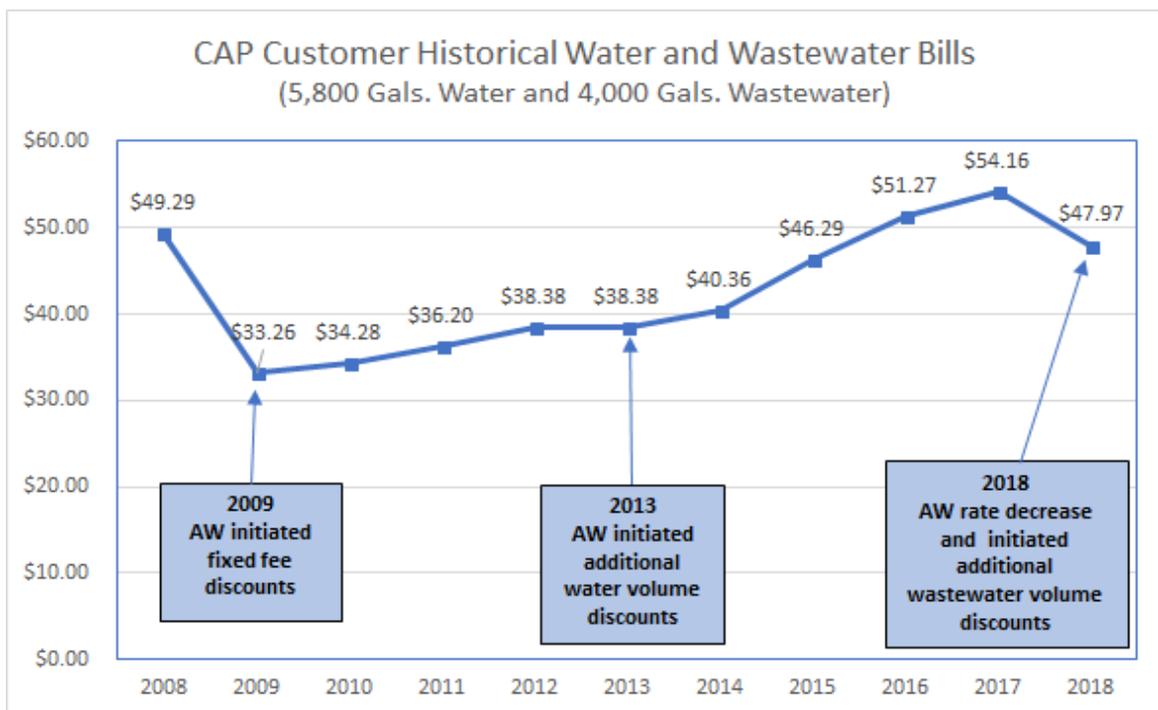
For example, at the beginning of the program, Austin Water provided CAP customers a waiver of their fixed charges. This provided an average 43% discount on their bills.

In 2013, Austin Water provided additional discounts for not only CAP customers' fixed charges, but also a water volumetric rate discount.

Then, in 2018, Austin Water provided an average 4.8% water and wastewater rate reduction for all retail customers including CAP, along with the addition of a new wastewater volumetric rate discount for CAP customers.

So, for 2018, the average CAP customer receives a 40% discount on their water and wastewater bills as compared to non-CAP residential customer. For an average CAP customer using 5,800 gallons water and discharging 4,000 gallons of wastewater, the monthly bill in 2018 is less than a CAP customer’s bill was in 2008 before the program started. This has provided significant affordability for our most vulnerable low-income customers.

Figure ES – 1: CAP Customer Historical Water and Wastewater Bills



Affordability Benchmark Study Process

Austin Water has historically and currently tracks two affordability benchmarks on an annual basis. Each of these benchmarks compare Austin Water results to multiple Texas and national cities. These include the following:

1. Customer Class Average Bill Comparison Survey
2. Residential Average Bill as Percentage of Median Household Income (%MHI)

As part of the Affordability Benchmark Study, Austin Water considered several alternative affordability benchmarks. For the most part, these benchmarks use the same Texas and national cities, where information is available. These benchmarks include the following:

3. Residential Low and High Volume Bill Comparison
4. Residential Customer Assistance Program (CAP) Customer Average Bill as Percentage of 80% Median Household Income
5. Total Residential Customer Class Average Revenue Per Account
6. Austin Water Historical Rate Increase Index versus Water Industry Index and CPI
7. Affordability Ratio 20 (AR₂₀)
8. Hours Minimum Wage (HM)

Affordability Benchmark Recommendations

Austin Water has compiled the data and analyzed the results of the eight affordability benchmarks listed above. Each of these benchmarks are discussed in detail as part of the study. In developing these recommendations, Austin Water has considered the degree of difficulty to compile the data needed, the ease of understanding the benchmark, and whether the benchmark will provide an ongoing benefit for future review.

From this study of the possible affordability benchmarks, Austin Water has developed recommendations for continued evaluations and reporting of the following four affordability benchmarks. Also, Austin Water has developed recommendations on the ongoing tracking and communication of these benchmarks to Council and our customers.

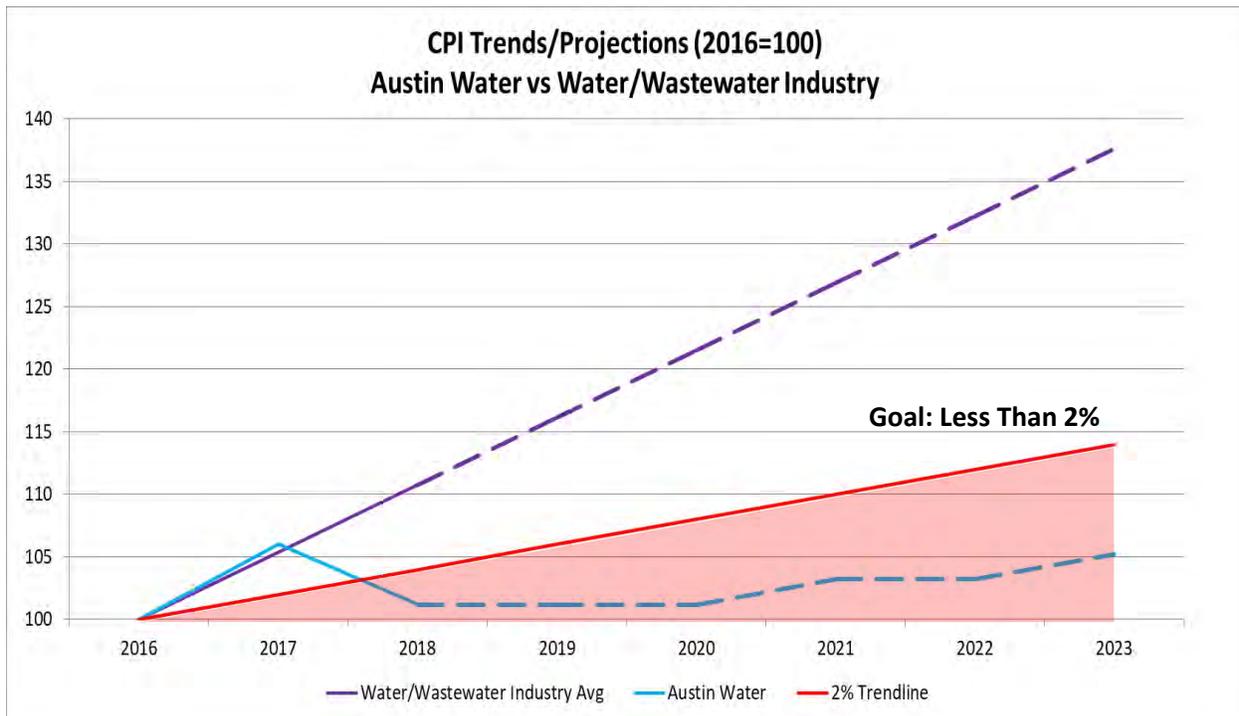
Recommendation: Austin Water Historical Rate Increase Index

This proposed benchmark is a variation of the No. 6 benchmark listed above. The proposed benchmark would include a comparison of the Austin Water historical rate increases, the water and wastewater industry cost index, and a reference 2% annual rate increase trendline. Each of these indices would be calculated using a base year of 2016. The goal for this benchmark would be for Austin Water to remain under the 2% annual rate increase trendline. This goal to remain under 2% represents approximately 50% of the current water and wastewater industry index

historical trend. This benchmark would be consistent with the current Austin Energy benchmark of remaining below a 2% annual rate increase trend.

Figure ES – 2 provides the recommended affordability benchmark graph. For 2016 and 2017, Austin Water was trending along the water and wastewater industry index level and above the 2% annual rate increase trendline. This was due to the rate increases experienced during these years. However, in the FY 2018 Approved Budget, Austin Water submitted a 0% rate increase and subsequently Council approved an amendment to the budget in April 2018 to implement a mid-year 4.8% rate reduction. With this rate reduction in 2018, Austin Water rates are below both the water and wastewater industry index and the 2% annual rate increase trendline. The graphic also provides for a projection of these indices through 2023. The water and wastewater industry index used a historical 15 year average increase to project through 2023. The Austin Water rates are based on Austin Water’s Financial Forecast submitted to Council in April 2018, which projected future rate increases. This forecast assumed no rate increases for FY2019, FY2020 and FY2022, and only a 2% increase in both FY2021 and FY2023. With Austin Water proposing multiple years of no rate increases and only two years of rate increases at the 2% level, the projection of the cost trends for Austin Water is currently below the 2% trendline.

Figure ES – 2: Cost Trends for Austin Water, Industry and 2% Trendline



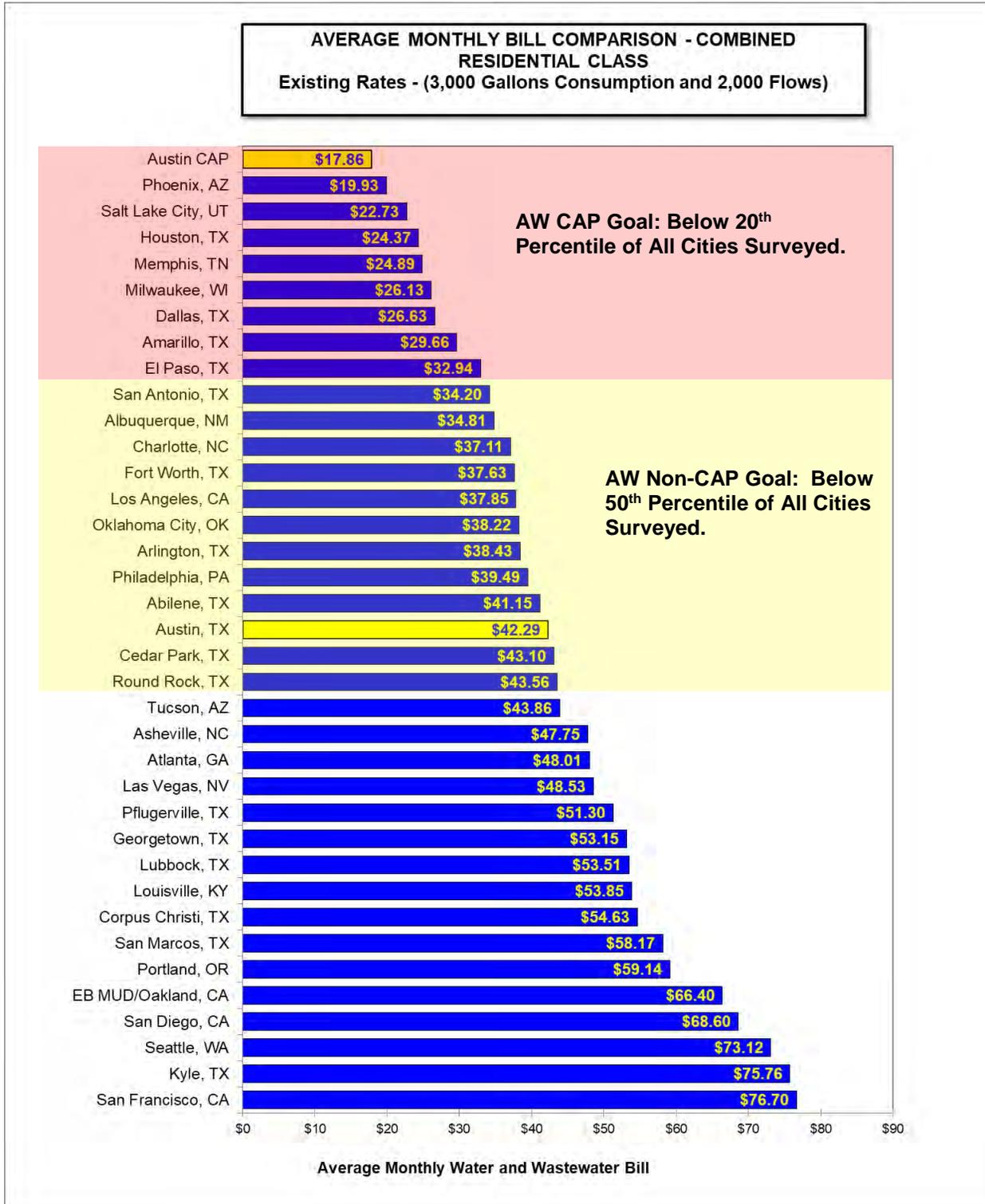
Recommendation: Residential Low Volume User Bill Comparison

This proposed benchmark is the low volume user bill comparison from benchmark No. 3 listed above. This low volume bill comparison of Texas and national cities uses combined water and wastewater bills based on customers using 3,000 gallons of water and 2,000 gallons of wastewater. The comparison of low volume bills is consistent with Austin Water's rate structure goals to promote water conservation and provide affordable basic water services to our customers. The CAP customer bill at low volumes should be at affordable levels so the most vulnerable low-income customers have access to basic water services at affordable costs. This benchmark is generally easy to calculate as the required rate information is typically available from each of the cities' websites.

Figure ES – 3 provides the recommended affordability benchmark graph. Austin Water proposes a goal of low-volume CAP residential customer bills being below the 20th percentile of all cities surveyed. Currently, Austin Water CAP residential low-volume bills are the lowest of all Texas and national cities surveyed. This is due to the significant fixed fee and volumetric bill discounts provided to our low-income CAP customers to keep their bills at affordable levels.

For non-CAP residential customer bills, Austin Water proposes a goal of being in the bottom half of all Texas and national cities surveyed. Currently, Austin Water is ranked 18th out of the 36 cities surveyed, exactly at the 50% level. As Austin Water's rates are projected not to increase until FY 2021 at the earliest, it is expected that our ranking within this benchmark will continue to improve.

Figure ES – 3: Low Volume Bill Comparison – Residential



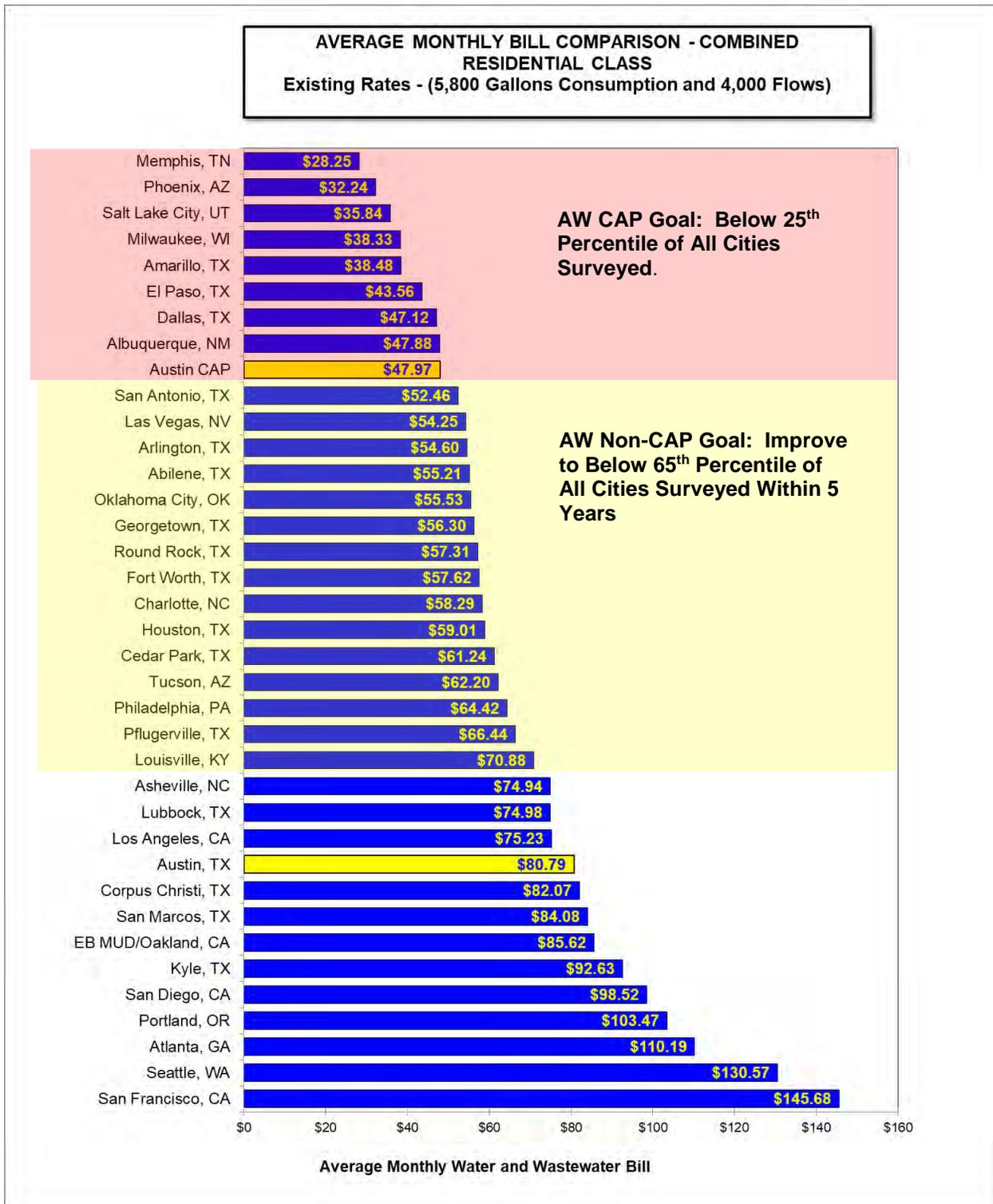
Recommendation: Residential Average Customer Bill Comparison

This proposed affordability benchmark, one that is currently tracked by Austin Water, is the residential average customer bill comparison. This benchmark compares combined residential water and wastewater bills at the current Austin Water average residential customer usage levels of 5,800 gallons of water consumption and 4,000 gallons of wastewater discharge per month. Approximately 65% of Austin Water's customers have bills that are at these levels of usage or below. Comparing combined bills at these levels is consistent with Austin Water's rate structure goals to promote aggressive water conservation by our customers. The rate schedule information needed to complete this benchmark is generally easily obtainable from each cities' websites. In also showing the Austin Water CAP customer bill, this benchmark highlights the affordability of our water services to our most vulnerable low-income customers.

Figure ES - 4 provides the recommended affordability benchmark graph. Austin Water proposes a goal for our CAP residential average bills at or below the 1st quartile, or lower 25%, of all Texas and national cities surveyed. Currently, Austin Water's CAP bill is within this 1st quartile goal, ranking 9th out of 36 cities surveyed.

For our non-CAP residential average bills, Austin Water proposes an interim goal of improving to below the 65th percentile of all Texas and national cities surveyed over the next five years. Currently, Austin Water's average residential bill is at the 75th percentile, ranking 27th out of 36 cities surveyed. Over the next five years, Austin Water anticipates significant improvement within this benchmark given the projection of no rate increases over the next two years and with minimal rate increases after that.

Figure ES – 4: Average Monthly Bill Comparison – Residential



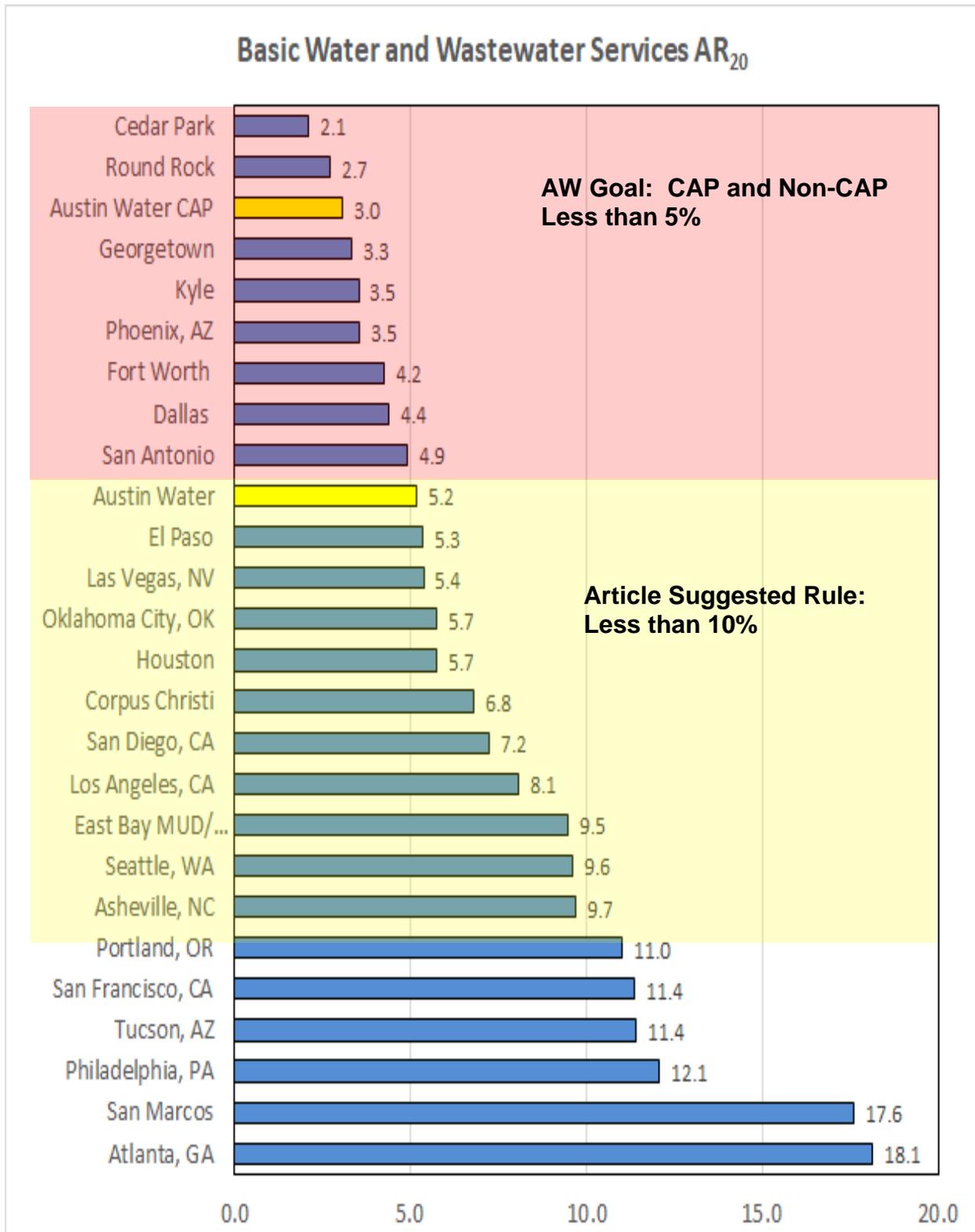
Recommendation: Affordability Ratio (AR₂₀)

The Affordability Ratio 20 (AR₂₀) is one of two benchmarks advanced in an American Water Works Association (AWWA) publication article written by Professor Manuel P. Teodoro of Texas A&M University. The title of the article is: *Measuring Household Affordability for Water and Sewer Utilities*, Journal AWWA, January 2018. The article provides a rationale for measuring the affordability of water and wastewater costs based on the impact on low-income households. The article **Measuring Household Affordability for Water and Sewer Utilities** is attached as **Appendix Attachment No. 7**.

Austin Water proposes the AR₂₀ benchmark, which measures the ability of low-income customers to pay for basic water and wastewater services after paying for other essential costs such as food and housing. The focus is on low-income customers who are at the 20th percentile of household income, as opposed to looking at customers at the higher median household income. These low-income customers represent the most vulnerable households in which affordability of water and wastewater services is critical. The level of household water and wastewater use for this benchmark is for basic health and sanitation needs, represented by 4,000 gallons of water consumption and 4,000 gallons of wastewater discharge per month. This focus on lower volume needs is presumably more representative of the basic water needs of low-income customers. This benchmark is generally easy to update each year through calculation of bills at the current rates. However, the estimation of each city's essential costs, other than water and wastewater services, can be more difficult to update annually and may require consultant assistance to provide updates.

Figure ES – 5 provides the recommended affordability benchmark graph. Professor Teodoro has suggested a rule of thumb that less than 10% of remaining income, after paying for other essential costs, would be needed to pay for basic water and wastewater services. Austin Water proposes adopting an even more affordable 5% goal for average residential CAP and Non-CAP customers. Currently, for the Austin Water CAP customers, the bill for basic water needs for low-income customers at the 20th percentile income level is only 3.0% of the remaining income after paying for other essential costs, and the lowest of any major Texas city surveyed. For Non-CAP customers, bills for basic water needs for low-income customers at the 20th percentile income level are only 5.2% of the remaining income after paying for other essential costs. This is just beyond the 5% Austin Water goal, but well below the recommended 10%. As Austin Water's rates are projected not to increase until FY2021 at the earliest, it is expected that the percentage of income needed by low-income customers to pay for basic water and wastewater services will continue to improve.

Figure ES - 5: Basic Water and Wastewater Services Affordability Ratio 20 (AR₂₀)



Recommendation: Implementation and Communication

Austin Water recommends the four proposed affordability benchmarks be updated annually as rates change for the cities. Austin Water currently updates its bill comparison survey during February of each year. Our current work on the bill comparison could be expanded to include these additional affordability benchmarks. This would allow for these affordability benchmarks to be communicated to our stakeholders – Council, Commission, customers, and interested parties. The affordability benchmarks could also be communicated throughout the forecast and budget development process during April through September. This would provide Council and Commission full transparency to improvements or changes in our affordability benchmarks. This information could also be included on Austin Water’s websites to provide additional transparency for our customers and stakeholders. Austin Water is currently planning to add an affordability section to our website. These benchmarks could be prominently displayed as part of this information.

It is also likely that Austin Water will continue, or begin, to update some of the other affordability benchmarks such as the percent of Median Household Income, High Volume Bill Comparisons and the Hours of Minimum Wage. These additional affordability benchmarks still provide benefit to Austin Water and inform our understanding of rate impacts.

Austin Water Affordability Benchmark Study

Study Overview

The Austin Water Affordability Benchmark Study was completed in response to the approved Council resolution, which is attached as **Resolution No. 20180201-068, Appendix Attachment No. 1**. This resolution directs the City Manager to provide Council with information about current internal benchmarks the City of Austin utilities (Austin Water and Austin Resource Recovery) conduct when assessing affordability and sustainability of utility services to customers. Additionally, the City Manager is directed to conduct a comprehensive, data-driven affordability benchmarking study for these two utilities as compared with other Texas cities, and also includes contextual information to better compare the differences between utilities. As part of the study, the City Manager is also directed to make recommendations on how to continue the utilities' evaluations with regard to affordability, how to effectively communicate these ongoing efforts, and how affordability goals may be reasonably determined, applied, tracked and disclosed.

Austin Water assembled an internal team to initiate the affordability benchmark study which included members of Financial Services and Environmental Affairs and Conservation. Austin Water also contracted for services from NewGen Strategies and Solutions, consultants who recently completed their role as residential rate advocate during the Cost of Service Rate Study. In their work during the cost of service rate study, NewGen provided significant input and recommendations on affordability benchmarks. The team of Austin Water staff and NewGen performed the work on the Affordability Benchmark Study.

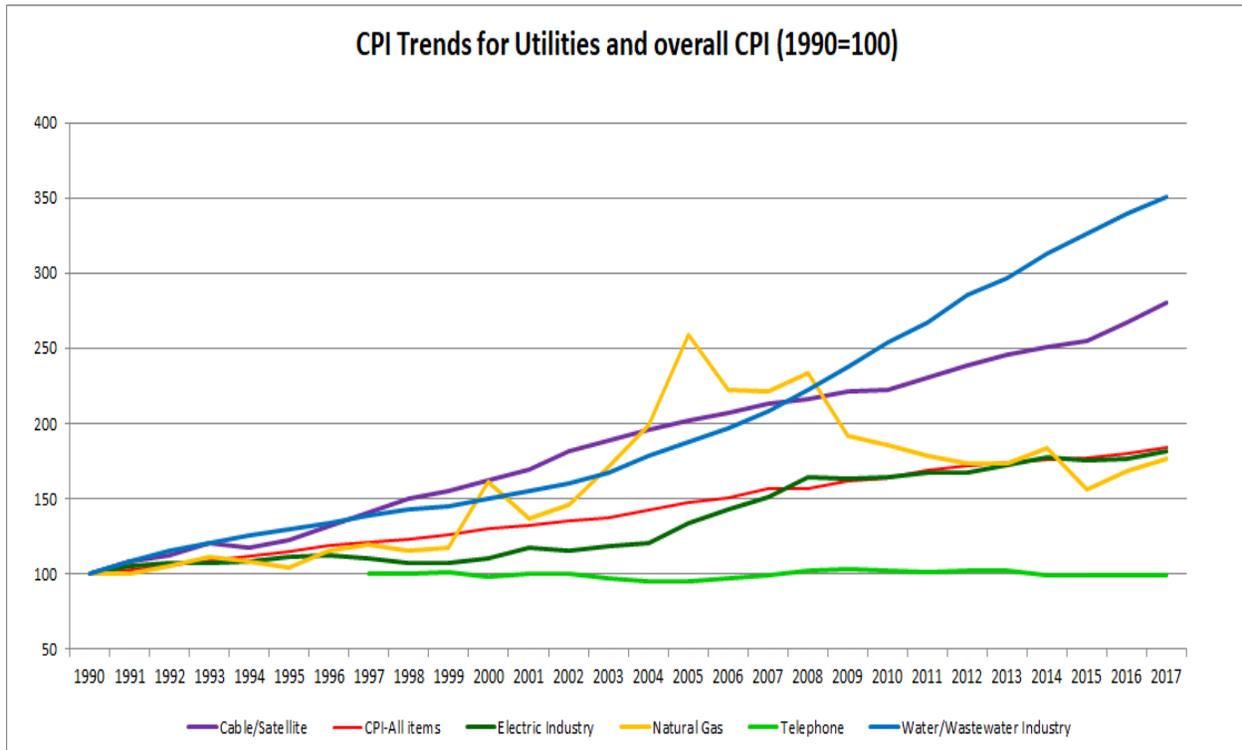
The Affordability Benchmark Study was conducted to comply with the City Council resolution and provide City Management with sufficient information to make informed recommendations on future affordability benchmarks for Austin Water. This included detailing the affordability benchmarks currently performed by Austin Water. The team also developed alternative benchmarks that could be considered for recommendations and reporting going forward. The study considered benchmark data from major Texas cities (Houston, Dallas, San Antonio, Fort Worth, El Paso and Austin), central Texas cities, and major national cities similar to Austin. A significant amount of contextual information on these Texas and national cities was compiled, including information on demographics, system characteristics, financial, rate structures, conservation programs, and customer assistance programs. The contextual information is included as **Affordability Benchmark Contextual Information Matrix, Appendix Attachment No. 2**.

Industry Trends

The cost of water services nationally is rising faster than any other utility service. This is due, in large part, to the need to replace ageing water and sewer infrastructure. With this increasing cost trend, the consideration of affordability for low-income customers becomes even more important. Utilities must consider rate structures, bill discounts, payment assistance, water conservation assistance, and other programs to ensure low-income customers are able to afford a basic level of water and wastewater service.

Figure 1 below provides utility industry cost trends since 1990. The graph includes the cost indices for water, electric, gas, cable, and telecom industries as well as an overall Consumer Price Index (CPI) as a guidepost for comparison. The water industry cost trends over the last 10 years have exceeded all other utility indices.

Figure 1: Cost Trends for Utilities and Consumer Price Index



Austin Water's challenge is to balance the need to continue investing in our water systems while addressing affordability concerns of not only our low-income customers, but all of our customers. Providing affordability benchmarks that measure the continued success of these affordability efforts is critical to stakeholder understanding.

Austin Water – The Basics

Austin Water provides water and wastewater services to more than a million people. The City's sole source of water is the Highland Lakes/Colorado River.

Austin Water is a municipally owned utility and transfers 8.2% of its revenues to the City of Austin's general fund, based on a three year average of total revenue.

The utility operates three water treatment plants, two wastewater treatment plants, the Hornsby Bend Biosolids facility, several smaller wastewater treatment facilities as well as numerous pump stations and lift stations.

Of the City's three water treatment plants, two have raw water intakes located on Lake Austin and one on Lake Travis. Both major wastewater plants discharge into the Colorado River downstream of the City, with a discharge that surpasses permit standards for water quality. In fact, under long-standing Environmental Protection Agency standards, the water quality in the river downstream of Austin Water's discharge points is rated higher than water quality upstream.

Hornsby Bend Biosolids plant is a no discharge facility which treats wastewater solids sent there from the two main wastewater treatment plants. Hornsby Bend is also popular with citizens for a myriad of bird watching opportunities and hosts various customer engagement and educational activities.

Rate Structure Acknowledges Essential Nature of Water

While by many measures Austin Water ranks among higher cost utilities, Austin Water's residential rates are built around the principle that water is essential to life and a resource to be preserved. So, in the residential rate class, usage at lower levels is charged at a lower per 1,000 gallon rate than usage at higher levels. The per 1,000 gallon rate increases as the level of usage increases – through five residential pricing tiers.

Austin Water rates for water and wastewater services are included as **Austin Water Rate Schedules, Appendix Attachment No. 3**. The schedules include rates for residential, multifamily, commercial, large volume, customer assistance program and wholesale customer classes. Figure 2 below provides the residential tiered fixed fees and volume charge rates per 1,000 gallons which were effective on May 1, 2018. Both the tiered fixed fee and the volume charges are structured using an inclining block rate structure. As mentioned above, a customer with lower water consumption in blocks 1 and 2 will pay a much lower fixed fee and volume charge. However, a customer using significantly more water and has consumption in blocks 4 and 5 will have a much higher fixed fee and volume charge per 1,000 gallons. This rate structure provides for a significant water conservation incentive, and affordability for lower volume users.

Figure 2: Residential Tiered Fixed Fees and Volume Charges

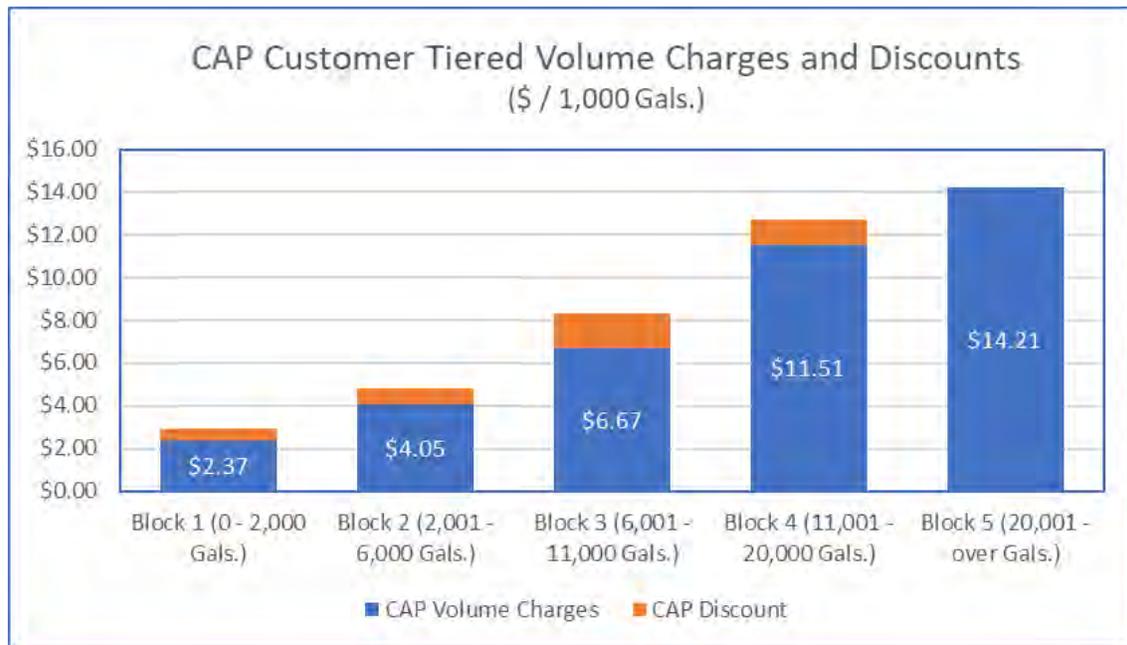


Customer Assistance Program (CAP)

Additionally, given that water is essential to life, Austin Water has developed separate rates for qualifying low-income customers. These rates include waiving the fixed fees and providing lower per 1,000 gallon rates in the lower level tiers. This is done through the Customer Assistance Program (CAP). In several of the graphs that follow both the standard Austin Water bills and the CAP bills will be noted.

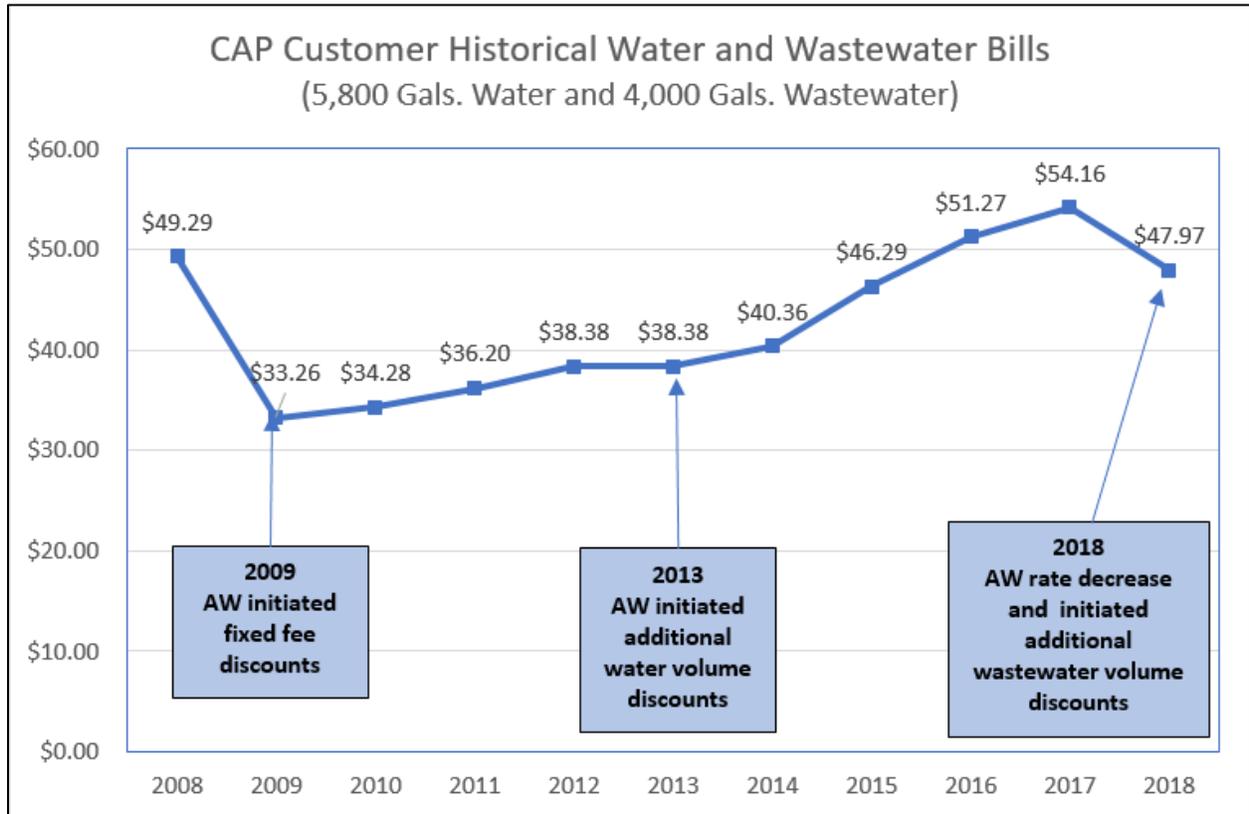
Figure 3 below provides the current CAP customer volume charges per 1,000 gallons and the discounts provided from the residential customer volume charges. The blue bars are the CAP customer volume charges and the orange bars are the discounts compared to the residential volume charges shown in Figure 2 above. Austin Water does not currently provide a discount for block 5 water use for CAP customers as a conservation incentive.

Figure 3: CAP Customer Volume Charges and Discounts



In Figure 4 below, the historical CAP customer water and wastewater bills are presented. The CAP program was initiated in 2009. At that time, Austin Water provided CAP customers a waiver of their fixed charges. This provided an average 43% discount on their bills. Subsequently, in 2013, Austin Water provided additional discounts for not only CAP customers' fixed charges, but also a water volumetric rate discount. Then, in 2018, Austin Water provided an average 4.8% water and wastewater rate reduction for all retail customers including CAP, along with the addition of a new wastewater volumetric rate discount for CAP customers. For 2018, the average CAP customer receives a 40% discount on their water and wastewater bills as compared to non-CAP residential customer. For an average CAP customer using 5,800 gallons water and discharging 4,000 gallons of wastewater, the monthly bill in 2018 is less than a CAP customer's bill was in 2008 before the program started.

Figure 4: CAP Customer Historical Water and Wastewater Bills



Drivers of Rates and Austin Water’s Affordability Efforts

During the recent drought, from 2008 to 2016, Austin Water experienced serious financial stress. Due to steps taken during the drought, however, the utility came out of the drought in a stronger financial position. The following provides a brief history.

Austin Water, at Council direction, dramatically strengthened its conservation programs beginning in 2007 and a host of conservation measures were instituted or enhanced. The largest impact on water savings came from what was then two-day-per-week watering restrictions -- which have more recently been strengthened to be one-day-per-week watering for automatic sprinkler systems.

Austin residents responded resoundingly to calls for water conservation. Since 2006 Austin’s per capita water usage has dropped by 35%.

Austin’s total water use also decreased during the same period, despite rapid population growth. The City uses less water now than it did at the turn of the century despite the fact the population has increased by around 300,000 since then.

Outside groups have recognized Austin's conservation gains. For example, in the Lone Star Sierra Club's 2016 analysis of city water conservation programs in Texas, Austin was ranked number one. Additionally, Austin Water's conservation programs were recently certified as meeting 100% of the standards and rated platinum by the Alliance for Water Efficiency, the largest utility to receive that designation and one of only three nationwide to receive that honor.

Austin Water believes conservation gains were essential given the drought and are also essential going forward given the challenges that climate change is projected to bring to Central Texas. Those projections include higher temperatures, more days over 100 degrees, increased evaporation, and more extreme weather events – primarily droughts broken by floods.

However, the reductions in water usage meant decreased revenue for Austin Water. This situation was accentuated by two factors –

- 1) Water utilities, in general, have relatively high fixed costs, meaning no matter how much, or how little, water customers use, the utility still has to have in place treatment plants, pipes, pumps, lift stations, and storage tanks, and when water use goes down the cost of operating the utility does not go down proportionally; and
- 2) Austin Water's residential rate structure at the time recovered very little of its costs through fixed charges, so as water sales decreased, fixed cost recovery decreased precipitously.

This is a national phenomenon and there is a name for it, the Conservation Conundrum.

Austin Water wants to note that the fact that this dynamic is being pointed out does not in any way mean that the utility opposes conservation. The opposite is in fact true.

The reality is, however, that when water use drops, either rates have to go up or costs have to be cut. During the drought, Austin did both. There were a variety of cuts, most notably the \$30 million reduction in expenses in FY 2015 as a result of the utility working with the Joint Committee on Austin Water's Financial Plan.

Austin Water had significant rate increases during the drought as well, including a 10.2% increase for the average residential customer in FY 2015, composed of a water increase of 18.7% and a wastewater increase of 2.9%. Further, Austin Water implemented a new tiered fixed charge that increases with water consumption to improve fixed cost recovery for the utility in the face of declining consumption. As a result of these combined actions, Austin Water was able to stabilize its finances.

Also, during the drought years, Austin Water's financial position was enhanced by the Council's 2013 action to stop discounting Capital Recovery Fees, also known as Impact Fees. This policy change was recommended by both the Impact Fee Advisory Committee and the Joint

Committee on Austin Water's Financial Plan. The increased revenue from Capital Recovery Fees has been instrumental in Austin Water's recent significant defeasances of bond debt, which has helped ease rate pressure.

The combination of rate increases and rate structure modifications, cost cutting, revenue increases from Capital Recovery Fees, and debt defeasances has strengthened Austin Water's financial position. This has been acknowledged by bond rating agencies who, in 2016, removed the Negative Watch placed on Austin's bond rating in 2014.

In 2016, Austin Water began a Cost of Service and Rate Design Study, which is a periodic process that examines the cost of providing service for each individual rate class. The process included a comprehensive public involvement process, which included a Public Involvement Committee that featured representatives of all customer classes including residential rate payers, multi-family, commercial, large volume industrial, and wholesale customers. There was also a consumer advocate to represent residential customers funded by Austin Water.

At the end of this process, Austin Water recommended, and the Council approved, an average 4.8% rate decrease for all retail customers. This decrease went into effect May 1, 2018.

Austin Water Rates Rank Among Higher Rates

Despite the cost cutting and rate decrease, Austin Water's rates still rank among the higher rate utilities – including among major Texas cities. The two primary reasons for the rate levels at Austin Water, in addition to the issues of aging infrastructure faced by virtually all utilities, are 1) accommodating growth, and 2) maintaining policies and programs that reflect community values. This is in addition to the financial pressures faced by all water utilities, as discussed briefly above. Additionally, there are many differences between cities that can affect their costs, such as source of water, treatment processes, topography, rate structures, conservation efforts, and other differences.

For example, Austin Water exclusively uses surface water for its water supply. Many cities, such as San Antonio, use primarily ground water. Surface water is generally much more expensive to capture and treat than ground water. Ground water generally requires only filtering and disinfection, which means significantly less cost than treating surface water.

Additionally, Austin Water includes lime softening in its water treatment processes. This produces a high quality water for our customers, but adds costs to the treatment process.

Also, Austin's hilly terrain and variations in elevation require additional pumping and storage facilities to provide water to our customers. This also increases costs in providing water services.

Another major driver of Austin's rates is keeping up with growth. While many years ago it was sometimes assumed that growth pays for itself, this did not prove to be the case for Austin.

Since the 1980s, Austin Water has invested hundreds of millions of dollars to maintain and expand its water and wastewater systems in order to provide safe, reliable service to a rapidly growing city.

Sometimes this investment did not happen fast enough. For instance, in the 1980s the Williamson Creek Wastewater Treatment Plant became stretched beyond capacity. This resulted in the Colorado River being seriously polluted with sewage.

The polluting of the river was a serious violation of Austin's values, specifically our commitment to protecting water quality. So, the utility invested over \$50 million dollars in building a new wastewater treatment plant and in improving the quality of Austin's discharge into the Colorado River.

Today things are different. In fact, as mentioned earlier, under long-standing Environmental Protection Agency (EPA) standards, the quality of water in the Colorado River downstream from Austin's treated wastewater discharge points is rated higher than immediately upstream. Austin Water is proud of this accomplishment and works every day to maintain it.

Those gains, however, did not come cheap. The primary financial impact has been to Austin's bond debt – which, of course, is reflected in Austin Water's rates.

Austin's growth has been more rapid and extensive than most cities, but it should also be noted that Austin Water also faces issues that many other utilities face. As previously noted, one issue facing virtually all utilities across the country is aging infrastructure. For example, the American Society of Civil Engineers (ASCE) gives the American water industry a D- on its infrastructure rating. ASCE does not rate individual utilities. Austin too has challenges with aging infrastructure, but almost certainly scores higher in the condition of its infrastructure than the national average. Part of this is because a significant amount of Austin's water infrastructure is reasonably new, due to growth, but it is also due to Austin's investments in upgrading and maintaining its infrastructure. Such investment, of course, contributes to higher rates but also yields a higher level of service. For example, well maintained facilities experience fewer failures and emergency repairs. This also results in less water lost to leaks and less inflow and infiltration into the wastewater collection system.

Honoring Austin's Values

As noted above, two of the cost drivers for Austin Water are 1) the bond debt that funded upgrading and improving wastewater treatment facilities after the serious shortcomings of the 1980s and 2) strengthening Austin Water's conservation programs to reflect community values as well as to respond to drought, climate change, and customer growth.

These two efforts, however, are only part of Austin Water's overall efforts to protect the environment, protect the City's water supply, and respond to climate change. And, like the CAP program, they reflect the values practiced at Austin Water and we believe they reflect the values of the Austin community as well.

In addition to water conservation, Austin Water's environmental programs include:

Wildlands Conservation – Austin Water Wildlands Conservation division manages more than 43,000 acres for endangered species and water quality protection. This includes the City of Austin's portion of the Balcones Canyonlands Preserve and the Water Quality Protection Lands, which protect water quality in Barton Springs – both through management of the land and forestalling development on the lands. In 1998 Austin voters approved \$65 million in bonds, paid by Austin Water, to begin purchase of the Water Quality Protection Lands. Since that time additional lands have been purchased with other City funds.

Many of these properties are outside Austin's water quality regulatory jurisdiction – meaning they would have developed under less stringent protections and would have been more likely to pollute Barton Springs.

Green Choice – Participation in Austin Energy's Green Choice Program dramatically reduces Austin Water's carbon footprint through using energy produced through renewable energy sources such as wind and solar. In addition, Austin Water has worked to build an energy conservation consciousness throughout the Utility. For example, Austin Water has opted to buy energy efficient equipment and upgrade electric infrastructure, to make it both more reliable and more energy efficient.

Onsite Generation of Renewable Energy – Onsite renewable energy programs, specifically a cogeneration system at the Hornsby Bend Sludge Treatment Facility, uses methane from the sludge to create enough electricity to power the plant and put some more renewable energy onto the grid. Further, around 10 years ago, a solar roof was installed on Austin Water's Glen Bell Service Center in Southeast Austin.

Fleet – Austin Water utilizes hybrid vehicles in its fleet, except when hybrids are not yet available for the specific purpose needed, such as for large service trucks.

Austin Clean Water Program – Another major contributor to Austin's environmental quality, as well Austin Water's bond debt, was a federal consent order to repair leaks in its sewage system. That order was instituted in 1999. While issued by the federal government, the goal was consistent with Austin's water quality and sound governance principles and, thus, the City government embraced this challenge.

Austin Water carried out a \$450 million program that significantly improved the City's sewage collection system. A number of other cities, including San Antonio, received significantly higher

cost consent orders after Austin. So, the costs from this expense went into Austin's rates earlier than some other utilities. As these other cities with consent decrees begin their infrastructure improvements, it is expected their rates will also be impacted.

LCRA Trigger – Another major initiative with historic financial and water supply impact was the contractual agreement with the Lower Colorado River Authority (LCRA) in 1999. Austin Water paid \$100 million to secure an additional 75,000 acre feet of water and to prepay for the reservation fee. This contract provided for a firm water availability of 325,000 acre feet per year through the year 2100 for the citizens of Austin. That's more than double what the City is using today.

The \$100 million payment was included in Austin Water's bond debt. At the same time the agreement included a conservation provision that is saving money for the citizens of Austin. This provision is commonly called the LCRA trigger. The trigger provision states that Austin Water does not have to pay LCRA for any water until the City's water usage reaches a trigger amount of an average of 201,000 acre feet over two consecutive twelve month periods. Once Austin Water hits the trigger, the utility would have to initiate annual payments for water above 150,000 acre feet. This would mean rate increases for Austin Water customers. Originally it was predicted that Austin would reach the trigger around 2022. Due to conservation successes, however, Austin is now not expected to hit the trigger until the late 2030s, saving Austin Water ratepayers millions of dollars.

The Value of Water

Another consideration when looking at water rates is the concept of the Value of Water. This term refers to the fact that water is essential to life and health, that water is often scarce, and that the price customers pay for water does not actually reflect its true value. This concept is usually referred to as "the value of water."

Austin Water strives every day to make water as affordable for our customers as possible – and will continue to do so. We want to note, however, there is a widespread sentiment within the industry – as well as among academics, industry analysts and the national environmental community – that water is underpriced.

For example, in a report on the state of the water industry the TechKnowledge Strategic Group from Stanford University concluded: "One simply cannot find another product whose real value so far exceeds its price - or for that matter, one whose price is often so unrelated to its true cost of delivery."

Arizona State professor Robert Glennon put the issue in another context in his book, *Unquenchable*, where he noted “Most Americans pay less for water than they do for cable television or cell phone service. Water is ridiculously cheap in the United States.”

Similarly, journalist Charles Fishman wrote in *The Big Thirst*, “Water bills are so low. . . If you had to pick one thing to fix about water, one thing that would help you fix everything else – scarcity, unequal distribution, misuse, waste, skewed priorities, resistance to reuse, shortsighted exploitation of natural resources – that one thing is price.”

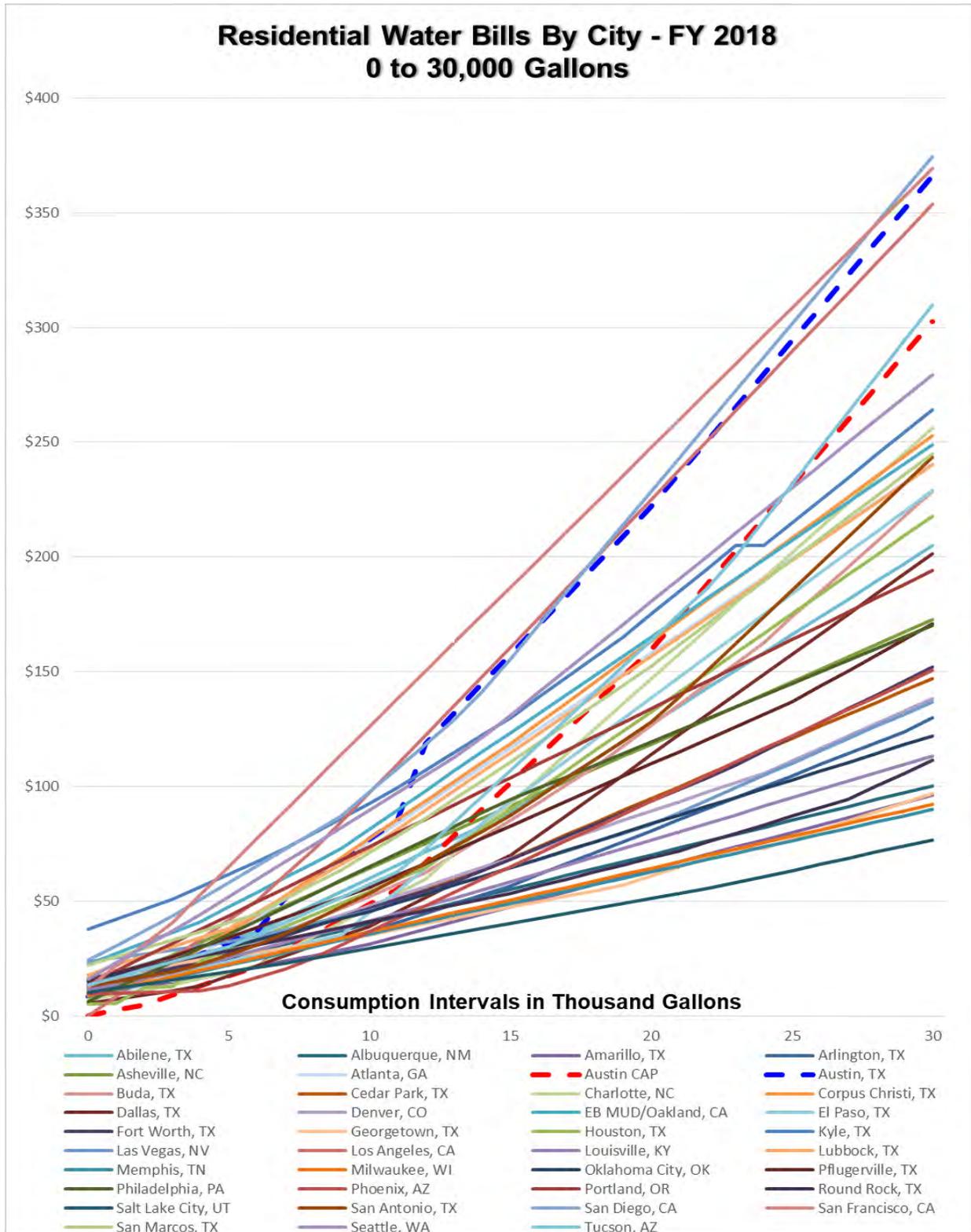
Comparing Austin Water’s Rate Structure to Others

As noted earlier, one area that reflects both Austin’s environmental and social equity values is in Austin’s residential water rate structure. The residential rate structure both encourages conservation through the tiered structure while providing essential water at a low cost to low income customers with the Customer Assistance Program – by waiving fixed fees for qualifying low-income customers and granting CAP customers volumetric rate discounts at lower levels of usage.

Also, as noted above, the overall residential rate structure is based on providing lower cost water at essential levels of usage with an inclining block rate structure. This is considered to be a conservation-oriented rate structure.

Figure 5 below provides a comparison of residential water bills from 0 gallons to 30,000 gallons in 1,000 gallon increments for all the benchmark cities. Austin Water residential water bills are shown in the thick blue dashed line. Austin Water residential CAP bills are shown in the thick red dashed line. While it is difficult to identify specific utilities other than Austin Water, the point of this graph is to show the general dispersion of the cities. For the lower volumes between 0 and 10,000 gallons, Austin Water residential bills are within the general mix of the cities, although in the higher group as consumption nears 10,000 gallons. The Austin Water CAP bills in the lower volumes are on the lower end of the cities. Additional graphs, presented later in the report, will present the 0 to 10,000 gallon results to allow for a clearer examination of these bills. For the higher volumes above 20,000 gallons, Austin Water residential and CAP water bills are at the higher end of all cities. This is a result of the aggressive water conservation incentives Austin Water has within its residential water rate structure.

Figure 5: Residential Water Bills by City – 0 to 30,000 Gallons



Affordability Benchmarks & Results

This section provides detail on the affordability benchmarks and results reviewed during the Affordability Benchmark Study. Austin Water considered eight affordability benchmarks and surveyed over 11 Texas cities and 13 national cities during the data compilation phase of the study. The pages below provide descriptions and results of benchmarks historically and currently tracked by Austin Water and alternative benchmarks that were calculated during the study for possible ongoing tracking in the future.

Austin Water has historically and currently tracks two affordability benchmarks on an annual basis. Each of these benchmarks compare Austin Water results to multiple Texas and national cities. These include the following:

1. Customer Class Average Bill Comparison Survey
2. Residential Average Bill as Percentage of Median Household Income (%MHI)

As part of the Affordability Benchmark Study, Austin Water considered several alternative affordability benchmarks. For the most part, these benchmarks use the same Texas and national cities, where information is available. These benchmarks include the following:

3. Residential Low and High Volume Bill Comparison
4. Residential Customer Assistance Program (CAP) Customer Average Bill as Percentage of 80% Median Household Income
5. Total Residential Customer Class Average Revenue Per Account
6. Austin Water Historical Rate Increase Index versus Water Industry Index and CPI
7. Affordability Ratio 20 (AR₂₀)
8. Hours Minimum Wage (HM)

These alternative benchmarks provide for additional affordability measures that can be used to compare and track with similar benchmark utilities. The following pages provide detailed descriptions, results and analysis of each of these current and alternative affordability benchmarks. These results reflect Austin Water's current rates, which became effective as of May 2018. The data for each of these benchmarks is included in a separate matrix and is attached to this report as **Affordability Benchmark Data Matrix – Appendix Attachment No. 4.**

Current Austin Water Affordability Benchmarks

1. Customer Class Average Bill Comparison

Advantages:

- Easy to obtain data and calculate
- Provides a good indication of bills for customers using the average volume of water and wastewater

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Not a great gauge of affordability given it does not consider income
- Does not account for the significant variation in actual customer water consumption

Austin Water currently conducts an annual water and wastewater bill comparison survey of Texas and national cities. This average bill comparison was most recently completed in March 2018. **Austin Water’s 2018 Bill Comparison Survey** is included as **Appendix Attachment No. 5**.

The bill comparison methodology includes assumed water consumption and wastewater flows for each month of the year based on AW’s historical average customer usage. The monthly bill for each of the 12 months of the year is computed at the assumed consumption and flows. The use of 12 months of bills provides a more accurate representation of what our average customer would pay for water and wastewater services during the year. The average monthly bill is the annual water and wastewater costs divided by 12. This is done for each of the cities based on AW’s assumed customer usage and flows. Water and wastewater rates are identified for each of the cities using website information and verification of bill calculation by utility staff of each city where possible.

Austin Water’s average residential customer uses 5,800 gallons of water per month and discharges 4,000 gallons of wastewater per month on an annual basis. The monthly water consumption and wastewater flows assumed to calculate the average annual bill for the residential customer class are shown in the table below. Approximately 65% of Austin Water’s residential water customers use below 5,800 gallons per month on an annual basis. Approximately 68% of Austin Water’s residential wastewater customers are billed below 4,000 gallons per month on an annual basis.

Average Monthly Residential Water Consumption/Wastewater Flows (1,000 gals.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Water	5.1	4.4	4.4	5.3	6.2	6.1	6.6	7.6	8.3	6.1	4.9	4.6	5.8
Wastewater	3.7	3.5	3.6	4.2	4.2	4.2	4.3	4.2	4.2	4.1	3.9	3.8	4.0

Similar assumptions of monthly average water usage and wastewater flows for the other customers classes are used in the calculation of average bills for these other customer classes.

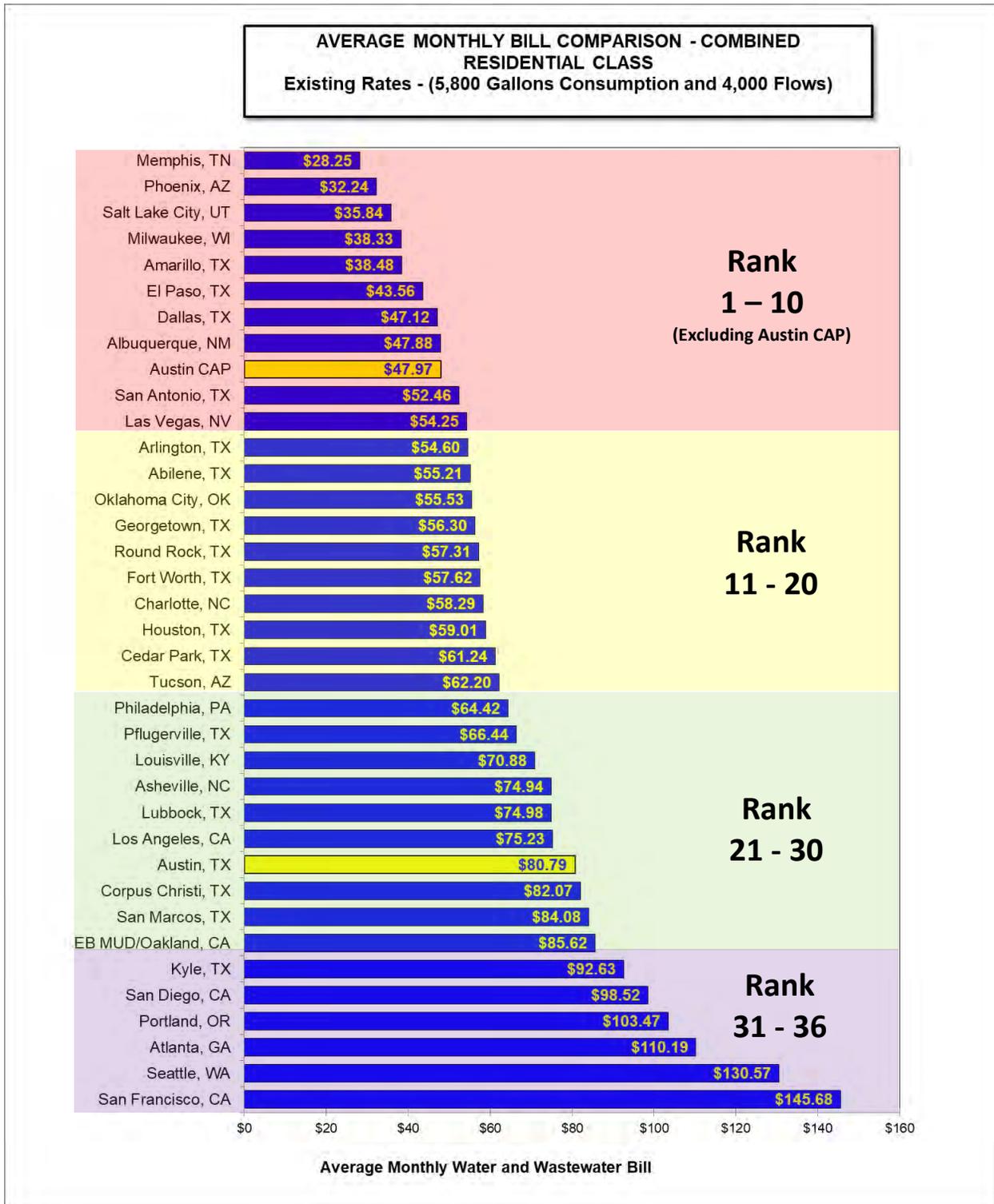
Caution should be taken when drawing conclusions from these comparison results. Significant variances between cities related to treatment processes, rate structure, fixed fees, geography, climate, service area, transfers to the general government and many other factors will impact a utility's cost structure and average bills.

Figures 6 through 8 on the following pages provide the survey results for residential, multifamily and commercial customer classes based on Austin Water's average customer water consumption and wastewater flows for each class.

The water and wastewater rates needed to compile the average monthly bills is generally available on each cities' website. Austin Water has a model that produces each of the cities' bills quickly based on their rates.

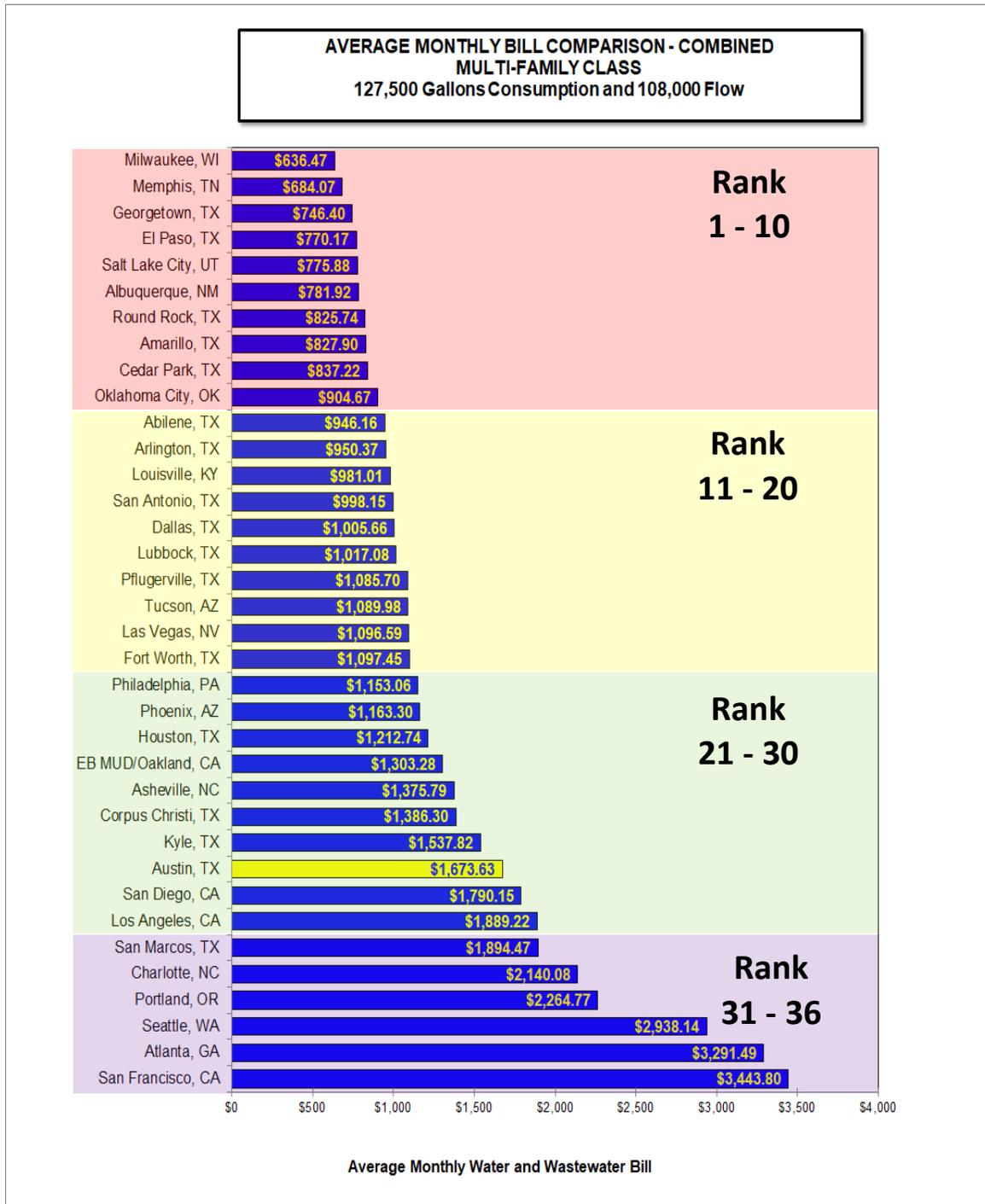
Austin Water residential average monthly water and wastewater bills are higher than major Texas cities, with only Corpus Christi, San Marcos and Kyle higher than Austin Water. Austin Water average customer bills are ranked 27th out of the 36 Texas and national cities surveyed, including Austin Water CAP. However, Austin Water's CAP customer bills are 40% lower than the Austin Water residential average bill. The Austin Water CAP bills are ranked 9th out of the 36 Texas and national cities surveyed.

Figure 6: Average Monthly Bill Comparison – Residential



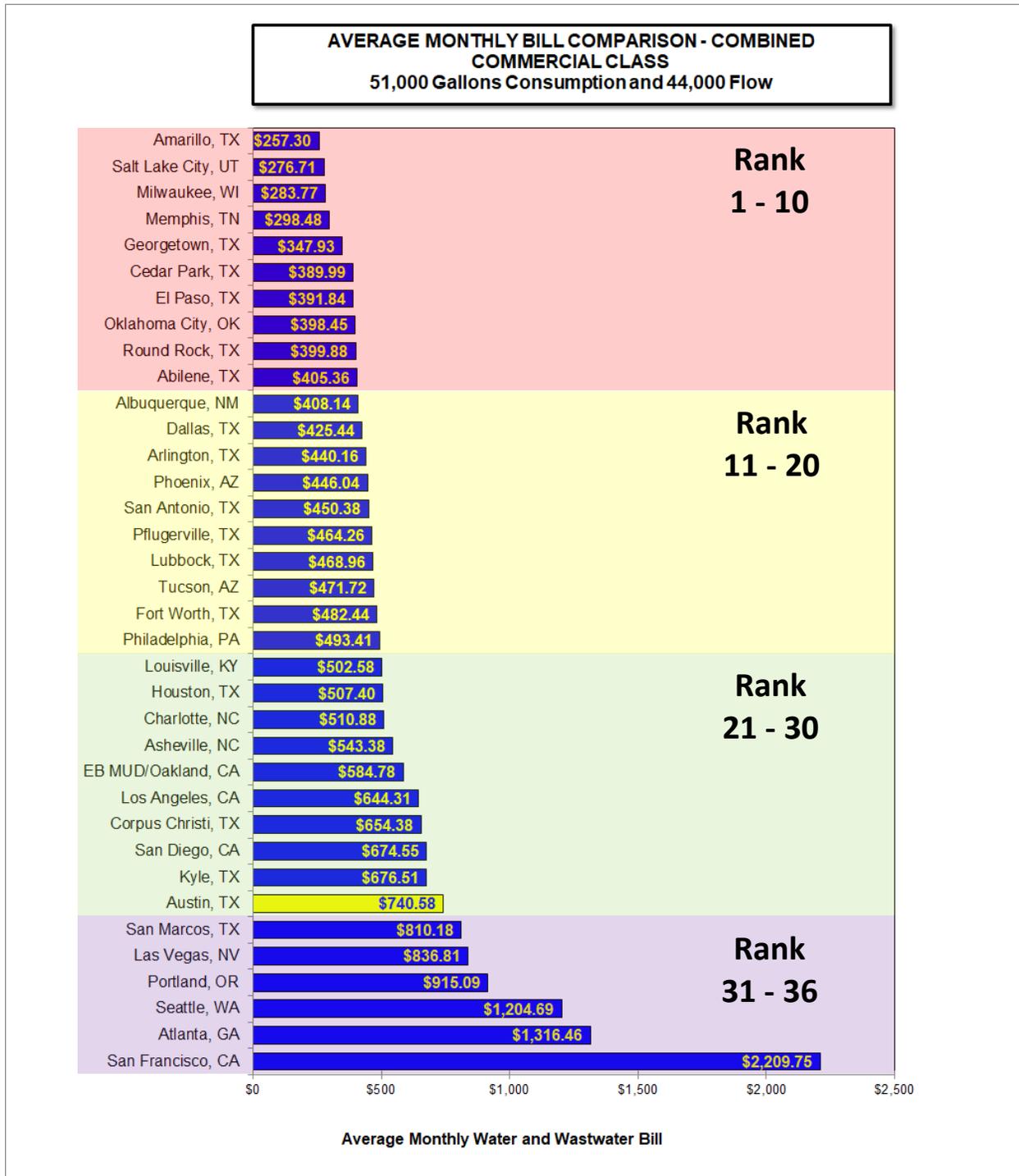
Austin Water’s multifamily average monthly water and wastewater bills are higher than major Texas cities, with San Marcos higher than Austin Water. Austin Water average customer bills are ranked 28th out of the 36 Texas and national cities surveyed.

Figure 7: Average Monthly Bill Comparison – Multifamily



Austin Water’s commercial average monthly water and wastewater bills are higher than major Texas cities, with San Marcos higher than Austin Water. Austin Water average customer bills are ranked 30th out of the 36 Texas and national cities surveyed.

Figure 8: Average Monthly Bill Comparison – Commercial



Current Austin Water Affordability Benchmarks

2. Residential Average Bill as Percentage of Median Household Income (%MHI)

Advantages:

- Easy to obtain data and calculate
- Widely used benchmark

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Setting a goal can be subjective and arbitrary
- Does not account for the significant variation in actual customer water consumption

Austin Water currently conducts an annual water and wastewater bill comparison survey of Texas and national cities. This average bill comparison was most recently completed in March 2018. As part of this bill comparison survey, Austin Water also compares these average bills as a percentage of the Median Household Income in each of the cities. **Austin Water's 2018 Bill Comparison Survey** is included as **Appendix Attachment No. 5**.

The average water and wastewater bill calculation prepared in Austin Water's 2018 Bill Comparison Survey is used to determine the annual water and wastewater costs to compare with each cities' median household income. The source of the median household income for each of the cities is the most recent American Community Survey (2016) for each city ¹. To compare the 2016 MHI to the 2018 rates, Austin Water adjusts the MHI by the 10-year national annual average percentage change in nominal Median Family Income (MFI) for Austin from the from the Department of Numbers website ².

The percentage of MHI benchmark is commonly used within the water industry, in part because it is relatively easy to calculate. However, there are concerns over the use of this benchmark and how well it measures affordability. First, there are issues with the arbitrary nature of setting standards or goals. An often used standard has been 2.0% or 2.5% of MHI based on US EPA guidelines to determine a community's ability to pay for capital projects. The use of this benchmark assumes that if a water or wastewater bill is below the 2.0% standard, then it is "affordable", and if the bill is above the standard, it is "unaffordable". There are some utilities that use the standard 2.0% for water and then add another 2% for wastewater, for a combined 4.0%. A recent American Water Works Association article on affordability discusses the use of MHI in determining affordability and explains the limitations and issues with this standard. The article **Make Water Affordable Again?** is attached as **Appendix Attachment No. 6**. Second, there are concerns with how income varies within different cities. There can be significant

¹ <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2016/>

² <http://www.deptofnumbers.com/income/texas/austin/>

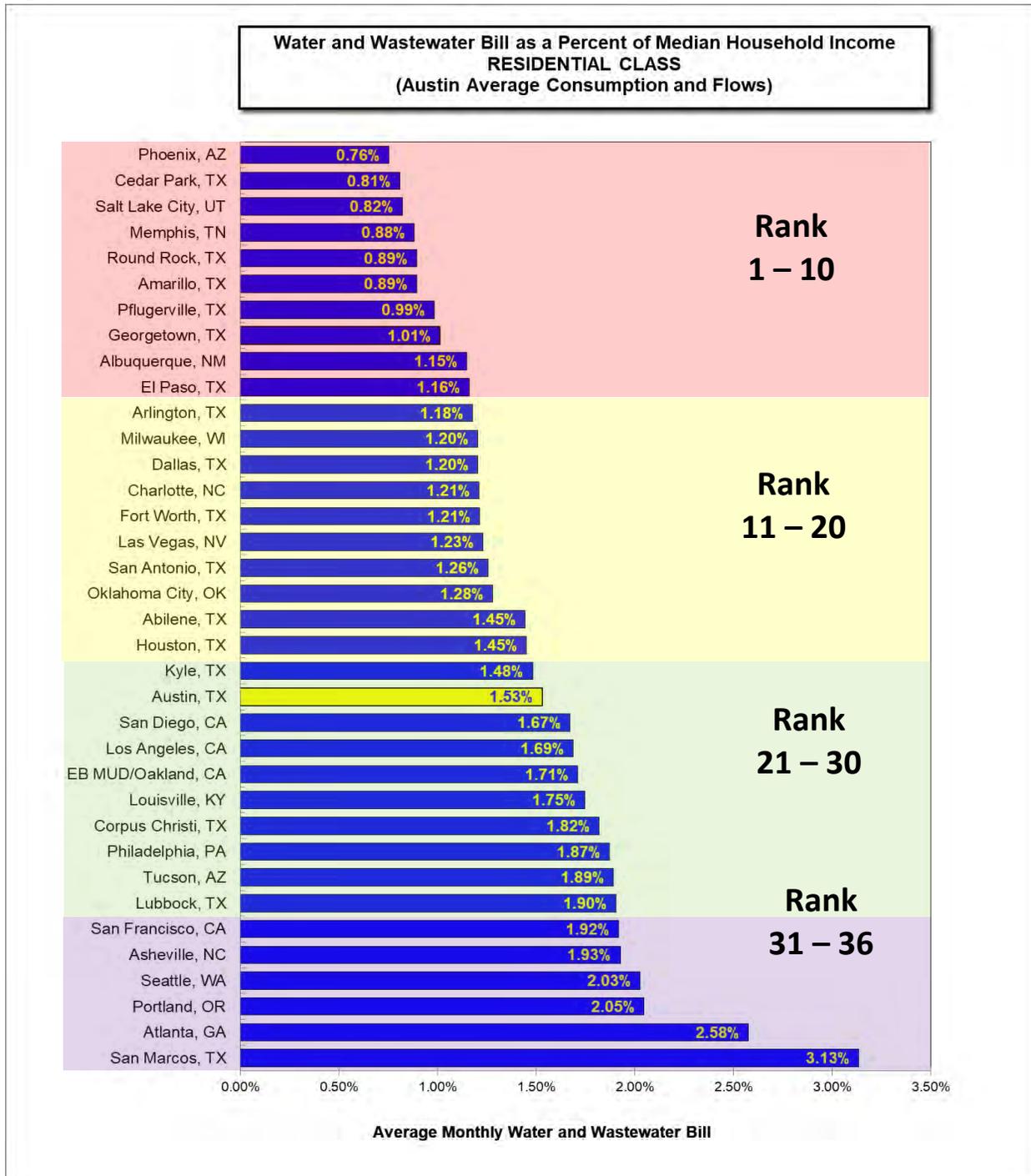
differences between high and low income households that are obscured by the reliance on MHI. This may cause reliance on MHI to be a poor indicator of affordability, especially for low income households.

Austin Water currently has a Key Performance Indicator (KPI) included in the FY 2018 Approved Budget of total water and wastewater annual bills as a percentage of MHI with a goal of below 1.5%.

Figures 9 and 10 on the following pages provide the percentage of MHI for all cities included in Austin Water's FY 2018 Bill Comparison Survey. Additionally, the graph of historical KPI of percentage of MHI for Austin Water is included.

Austin Water residential average annual water and wastewater bills as a percentage of MHI are higher than major Texas cities, with only Corpus Christi and Lubbock higher than Austin Water. For an average residential customer of Austin Water having a median household income, they would spend 1.53% of their annual income on water and wastewater bills. Austin Water average residential customer annual bills as a percent of MHI are ranked 21st out of the 36 Texas and national cities surveyed.

Figure 9: Water and Wastewater Bills as Percent of Median Household Income ³



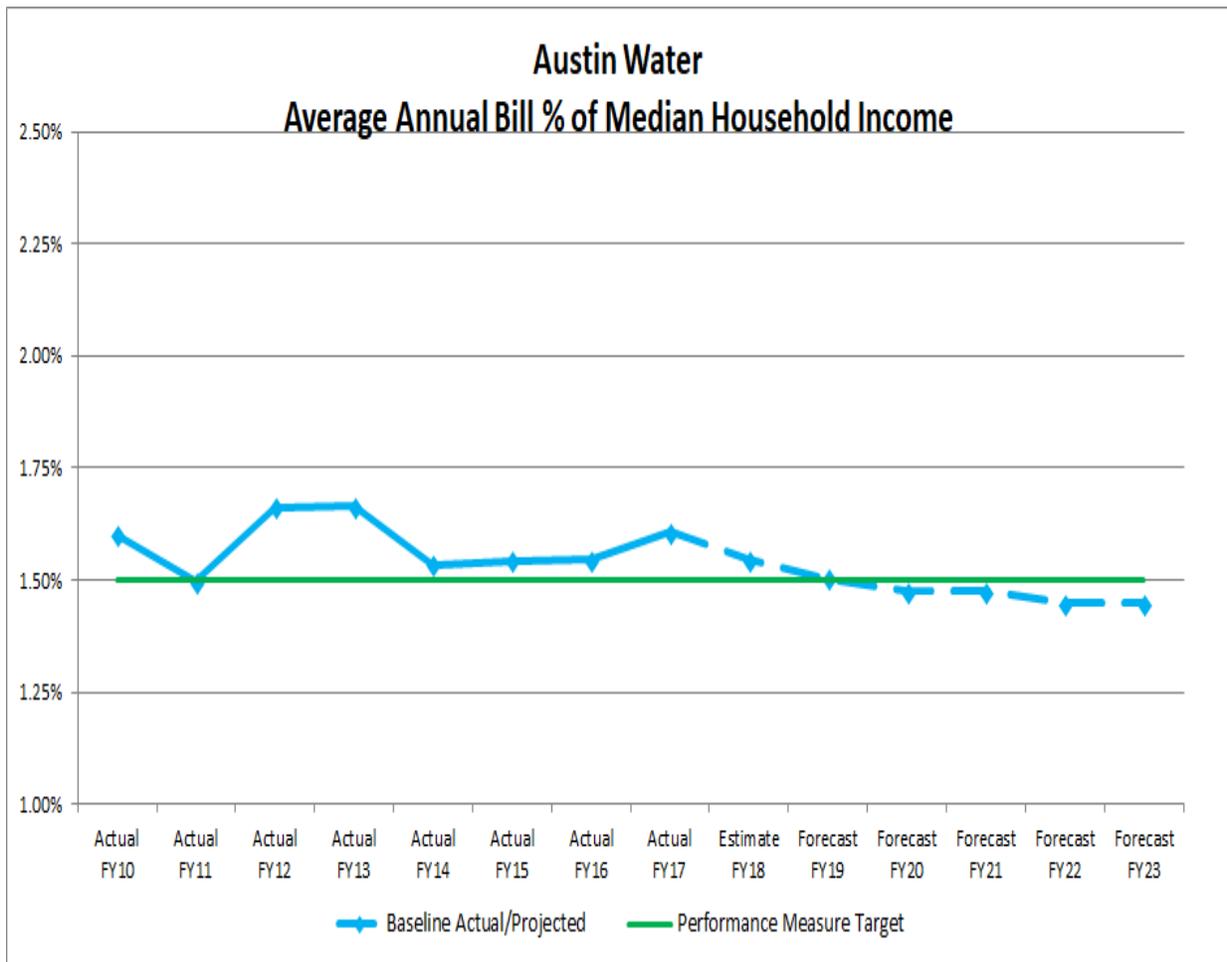
³ Austin Water used the most recent American Community Survey MHI (2016) for each city¹. In order to more accurately compare the 2016 MHI to the 2018 approved rates and fees, Austin Water adjusts the MHI by the 10-year national annual average to calculate an adjusted MHI. The water and wastewater bills as a percentage of MHI is calculated by dividing the annual combined bill based on each city's rates and Austin's average consumption and flows by the adjusted MHI of that city.

References:

1. <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2016/>

Figure 10 below provides a historical look at Austin Water's average customer annual water and wastewater bills as a percent of MHI. Austin Water has set a goal that our average customer's annual water and wastewater bills represents less than 1.5% of the median household income. Historically, Austin Water has not achieved the 1.5% goal except in FY 2011. However, Austin Water forecasts that it will achieve the 1.5% goal in FY 2019. Further, Austin Water forecasts a downward trend for this benchmark to below the 1.5% goal. This is due primarily to Austin Water projecting no rate increases in FY 2019 and FY 2020, with only minimal rate increases in FY 2021 and FY 2023.

Figure 10: Austin Water Average Annual Bill as Percent of Median Household Income



Alternative Affordability Benchmarks

3. Residential Low and High Volume Bill Comparison

Advantages:

- Easy to obtain data and calculate
- Provides a good indication of bills for basic services (i.e., low volume bills), especially for CAP program participants
- Better reflects the results for low and high volume customers (i.e., customers not using the average volumes)

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Not a great gauge of affordability given it does not consider income

This low and high volume bill comparison is an alternative affordability benchmark which illustrates Austin Water's commitment to water conservation given Austin Water's current inclining block rate structure for residential customers. Water and wastewater bills are calculated based on low volume assumptions of 3,000 gallons of water use and 2,000 gallons of wastewater discharge and high volume assumptions of 10,000 gallons of water use and 5,000 gallons of wastewater discharge. These water use and wastewater discharge assumptions are below and higher than Austin Water's average residential customer use. The low volume levels generally represent basic essential water needs. The high volume levels generally represent customers with moderate discretionary water use and irrigation demands.

Water and wastewater rates are identified for each of the cities using website information obtained for benchmark #1 (average bill comparison). This benchmark is easily updated annually.

Caution should be taken when drawing conclusions from these comparison results. Significant variances between cities related to treatment processes, rate structure, fixed fees, geography, climate, service area, transfers to the general government and many other factors will impact a utility's cost structure and average bills.

Figure 11 below provides the low volume residential bill comparison using 3,000 gallons water and 2,000 gallons wastewater discharge. Austin Water's residential rate structure is designed to provide lower costs for lower volume use. At these low volume levels for basic water needs, Austin Water is more competitive with other cities than at the average customer bill comparison results. At these low volume levels, Corpus Christi and the central Texas cities are above Austin Water bills. The major Texas cities are all below Austin Water bills.

For the CAP customer bills at these low volumes, Austin Water CAP customers have the lowest bill of all the cities surveyed. At these levels, the CAP bill is only 42% of the non-CAP Austin Water customer bill. This represents a discount of 58% on bills for our most vulnerable low-income CAP customers using basic water needs. The discount provided is a waiver of all fixed fees and a discounted volumetric rate per 1,000 gallons for blocks 1 through 4, with only the block 5 rate for CAP customers being the same as the rate for non-CAP residential customers.

Figure 11: Low Volume Bill Comparison – Residential

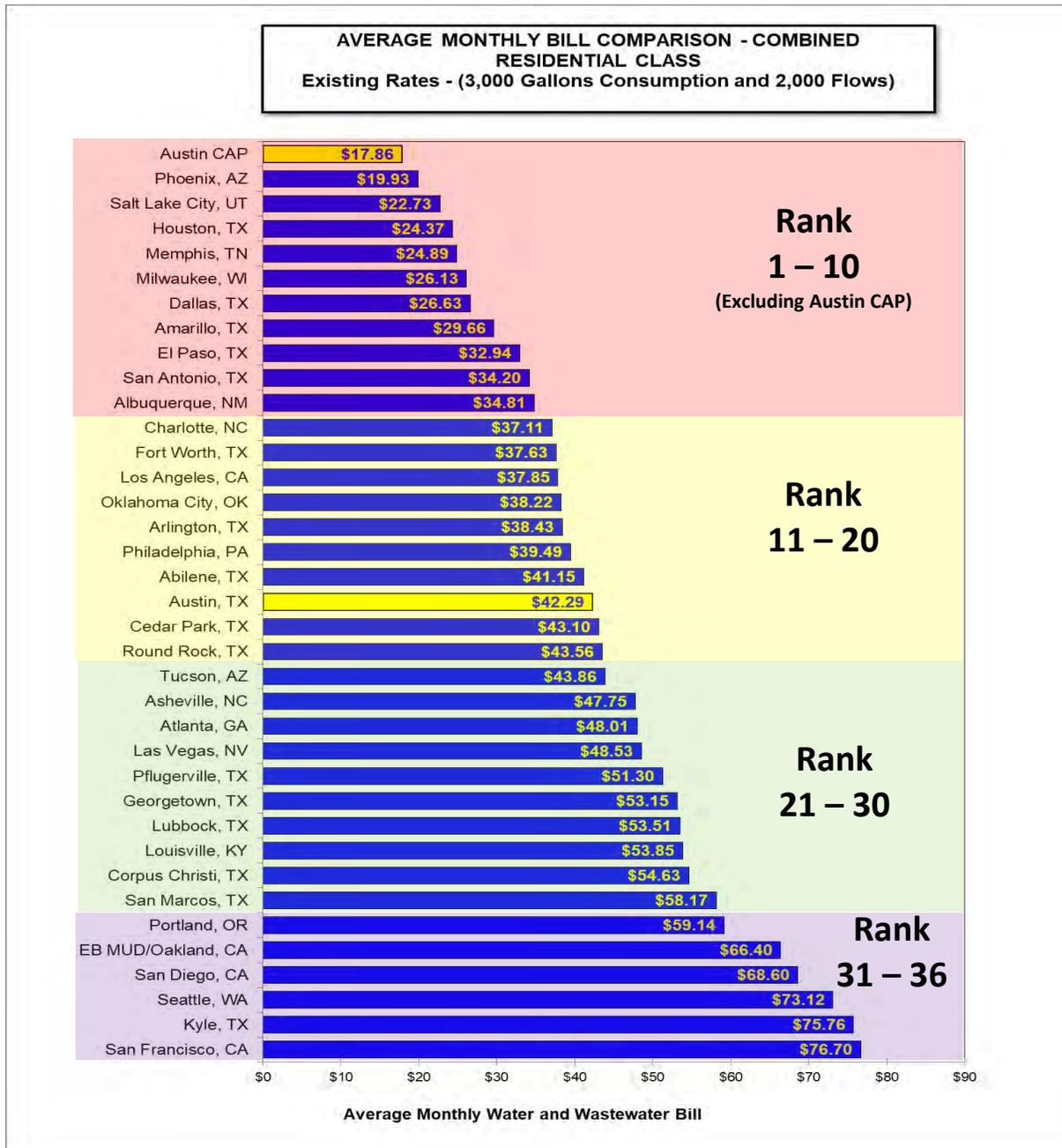
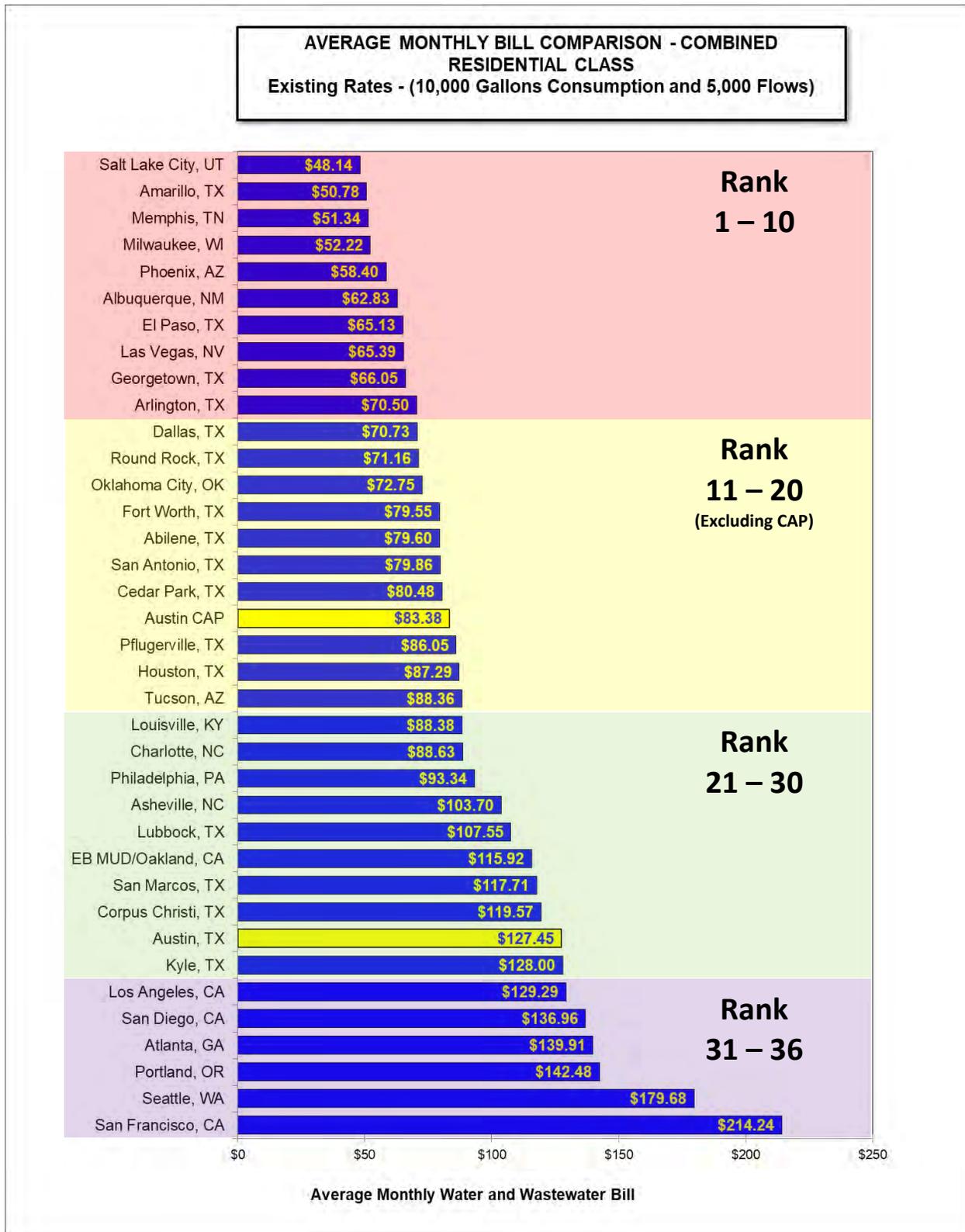


Figure 12 below provides the high volume residential bill comparison using 10,000 gallons water and 5,000 gallons wastewater discharge. Austin Water's residential rate structure is designed to provide higher costs for higher volume use. At these high volume levels, Austin Water is less competitive with other cities than the average customer bill comparison results. At these high volume levels, only one central Texas city, Kyle, is above Austin Water bills. The major Texas cities are all below Austin Water bills.

For the CAP customer bills at these high volumes, Austin Water CAP customers are higher than most major Texas cities, except Houston. At these high volume levels, the CAP residential bill is only 65% of the non-CAP Austin Water customer bill. This represents a discount of 35% on bills for our most vulnerable low-income CAP customers using these higher volumes. The discount provided is a waiver of all fixed fees and a discounted volumetric rate per 1,000 gallons for blocks 1 through 4, with only the block 5 rate for CAP customers being the same as the rate for non-CAP residential customers.

Figure 12: High Volume Bill Comparison – Residential



Austin Water's residential water rate structure is designed to promote water conservation. The residential water rates include a fixed minimum charge based on meter size, a 5-block fixed fee that is based on the amount of consumption for the month and a 5-block volumetric rate per 1,000 gallons. The lower blocks of the fixed fee and the volumetric rate are less expensive than the higher blocks. The current spread between blocks 1 and 5 for the fixed fee is \$28.50 per month. The current spread between blocks 1 and 5 for the volumetric rate is \$11.25 per 1,000 gallons. These aggressive inclining block fixed fee and volumetric rate structures provide significant incentives to our customers to be aggressive in their water conservation efforts. The graphs and information below provide context to affordability discussions and comparisons with other cities.

Figure 13 below provides a histogram indicating the percent of residential customers that have their last metered gallon of water use in each of the five rate blocks. Approximately 65% of Austin Water customers have monthly water bills that are in our first two rate blocks which are between 0 gallons and 6,000 gallons. An additional 22% of our customers have water bills in block 3 which is from 6,001 gallons to 11,000 gallons. Only 13.5% of Austin Water's customers have water bills in our top 2 blocks which is 11,001 gallons and over. While residential water bills for higher volumes can be considered high compared to other cities, these rates only impact a small percentage of our customers who might use water at levels in our blocks 4-5 above 11,000 gallons.

Figure 13: Percentage Residential Customer Bills by Rate Block

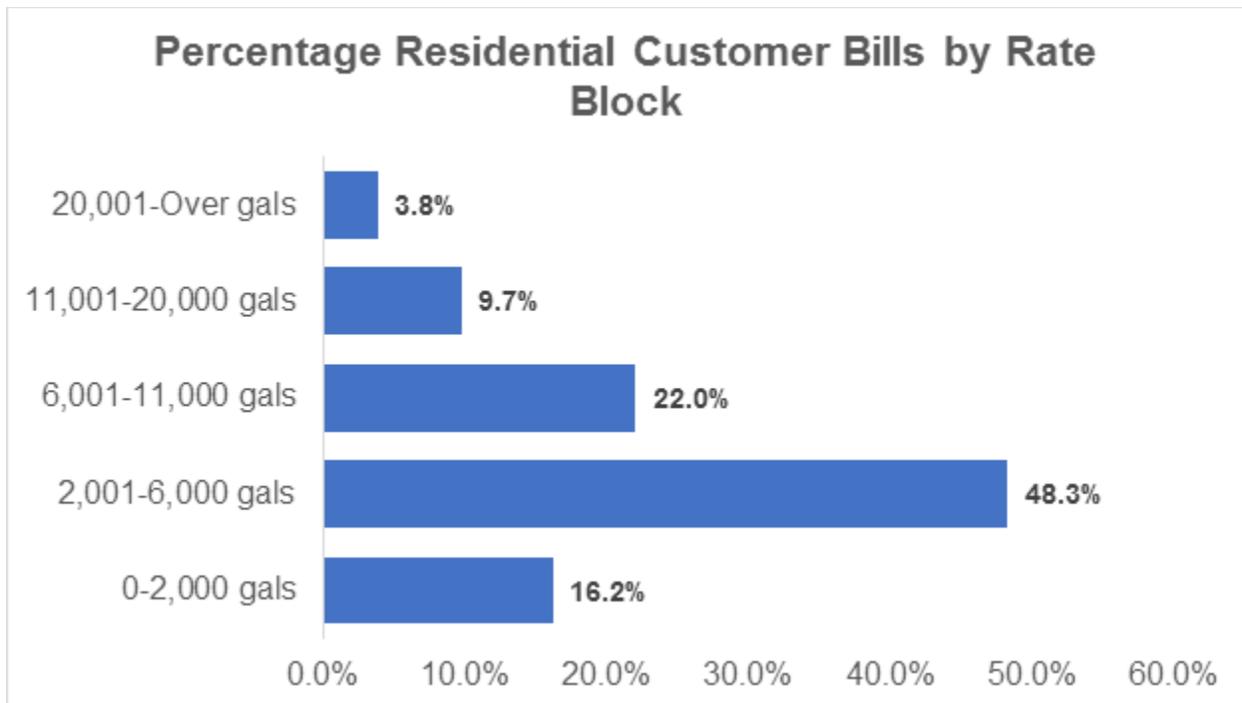


Figure 14 below provides a comparison of residential water bills from 0 gallons to 30,000 gallons in 1,000 gallon increments for all the benchmark cities. Austin Water residential water bills are shown in the thick blue dashed line. Austin Water residential CAP bills are shown in the thick red dashed line. While it is difficult to identify specific utilities in this graphic, other than Austin Water, the point of this graph is to show the general dispersion of the cities. For the lower volumes between 0 and 10,000 gallons, Austin Water residential bills are generally within the general mix of the cities. The Austin Water CAP bills in the lower volumes is on the lower end of cities. Additional graphs will present the 0 to 10,000 gallon results to allow for a clearer examination. For the higher volumes above 20,000 gallons, Austin Water residential and CAP water bills are at the higher end of all cities. This is a result of the aggressive water conservation incentives Austin Water has within its residential water rate structure.

Figure 15 provides a section snapshot of the graph above and provides a comparison of residential water bills from 0 gallons to 10,000 gallons in 1,000 gallon increments for all the benchmark cities. Austin Water residential water bills are shown in the thick blue dashed line. Austin Water residential CAP bills are shown in the thick red dashed line. While it is difficult to identify specific utilities in this graphic, other than Austin Water, the point of this graph is to show the general dispersion of the cities. For the lower volumes between 0 and 4,000 gallons, Austin Water residential bills are generally within the general mix of the cities. The Austin Water CAP bills in the lower volumes (below 4,000 gallons) are the lowest of all cities. For the higher volumes (above 6,000 gallons), Austin Water residential bills are at the higher end of all cities. For the higher volumes (above 6,000 gallons) for the CAP customers, the bills are generally within the mix of most cities.

Figure 15: Residential Water Bills by City – 0 to 10,000 Gallons

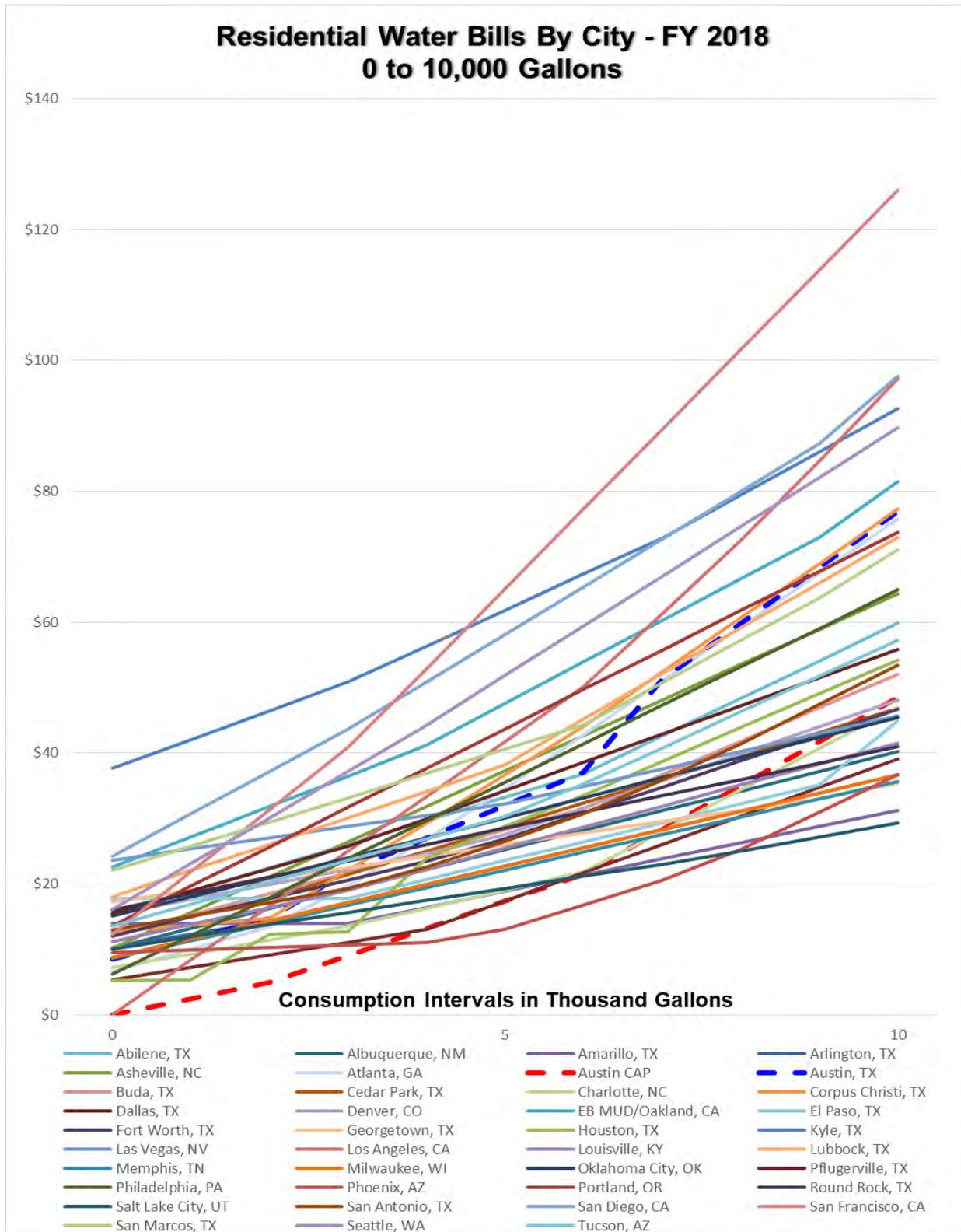
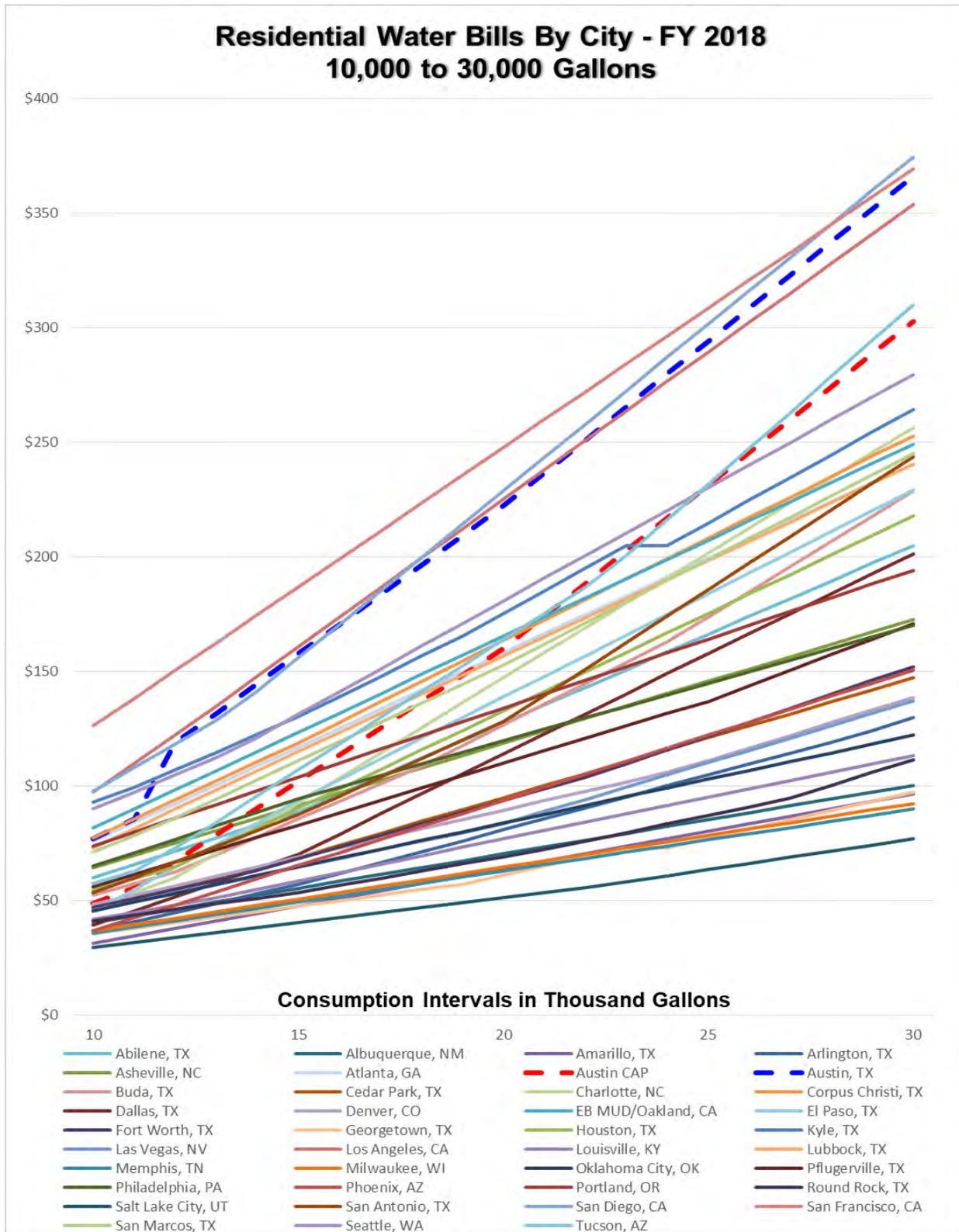


Figure 16 provides a section snapshot of the first graph above and provides a comparison of residential water bills from 10,000 gallons to 30,000 gallons in 1,000 gallon increments for all the benchmark cities. Austin Water residential water bills are shown in the thick blue dashed line. Austin Water residential CAP bills are shown in the thick red dashed line. While it is difficult to identify specific utilities in this graphic, other than Austin Water, the point of this graph is to show the general dispersion of the cities. At the volumes of 10,000 to 12,000 gallons, Austin Water residential bills are within the high end of cities. Austin Water's 3rd residential rate block is from 6,001 to 11,000 gallons. Austin Water's residential and CAP rates for blocks 4 and 5, which are above 11,000 gallons, are significantly higher per 1,000 gallons than the first three blocks. This fact impacts the residential and CAP water bills which fall within the highest of the benchmark cities at the higher volumes.

Figure 16: Residential Water Bills by City – 10,000 to 30,000 Gallons



Alternative Affordability Benchmarks

4. Residential Customer Assistance Program (CAP) Customer Average Bill as Percentage of 80% Median Household Income

Advantages:

- Moderately easy to obtain data and calculate (the only time intensive part is identifying relevant low income discounts for other utilities)
- Provides a good indication of bills for low income customers using the average volume of water and wastewater

Disadvantages:

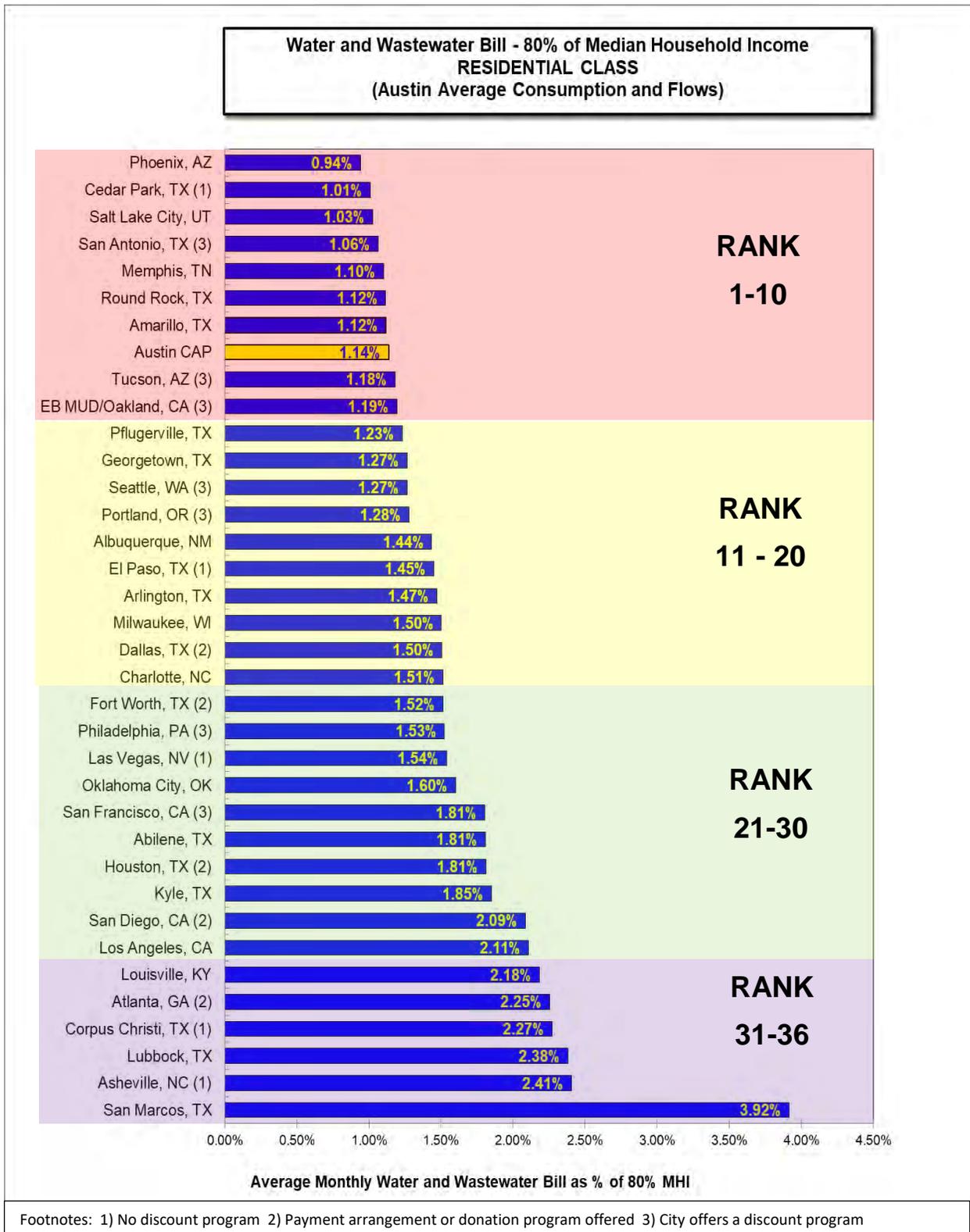
- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Setting a goal can be subjective and arbitrary
- Does not account for the significant variation in actual customer water consumption

This affordability benchmark is similar to the percentage of MHI in Benchmark #2 on Page 21. However, the Austin Water bill compared here is the residential CAP customer bill for average water usage of 5,800 gallons and wastewater discharge of 4,000 gallons. Instead of using the CAP bill against the MHI for each city, we have used 80% of the MHI in each of the cities. Austin Water chose 80% of the MHI because this is generally considered the poverty level for many federal programs. In Austin, a customer may qualify for different federal or state programs that allow the customer to be considered for CAP assistance programs and water and wastewater service discounts. Many of those qualifying programs use the 80% MHI test.

The information on each of the cities' MHI can easily be obtained from federal websites. It is a simple calculation to determine the 80% MHI level in each city. However, determining whether a city has any type of customer assistance program discounts is more difficult to determine. Many of the cities do not have any customer assistance programs that provide discounts, or the assistance is not sufficiently predictable or formalized to be included. In these cases, the cities' standard average bill was used to compare with the 80% MHI metric.

Figure 17 provides the results of the CAP customer bill as a percentage of 80% MHI. Since Austin Water provides a significant CAP customer discount, the Austin Water CAP average residential bill result is 1.14% of 80% MHI. This level of percentage of 80% MHI is lower than all of the major Texas cities. Only the smaller cities of Cedar Park, Round Rock and Amarillo have lower percentages. The general benchmark for this measure would be to have a percentage below 1.5%, which Austin Water meets.

Figure 17: CAP Bills as Percent of 80% Median Household Income



Alternative Affordability Benchmarks

5. Total Residential Customer Class Average Revenue Per Account

Advantages:

- The only benchmark that removes the influence of rate design on the analysis
- Accounts for the significant variation in actual customer water consumption

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Time intensive to obtain data and calculate since the key data is not typically available on public websites

Average revenue per account is an instructive benchmark because it removes the influence of rate design on the analysis. Many utilities have some form of inclining block rate structure, but there can be myriad differences between these rate structures, such as the number of blocks, the volume included within each block, the percent rate increase between successive rate blocks, etc. Further, some utilities do not have an inclining block rate structure. Therefore, comparing these various utilities based on an assumed volume of water consumption or billed wastewater flow can be inequitable. For example, what if the volume of water selected for the bill comparison happens to include water billed at the third or fourth rate block for Austin Water, but only includes water billed at the first or second rate block for all other utilities? This difference can have a meaningful impact on the comparison because the rate for the first or second rate block is often set below the embedded cost of providing service.

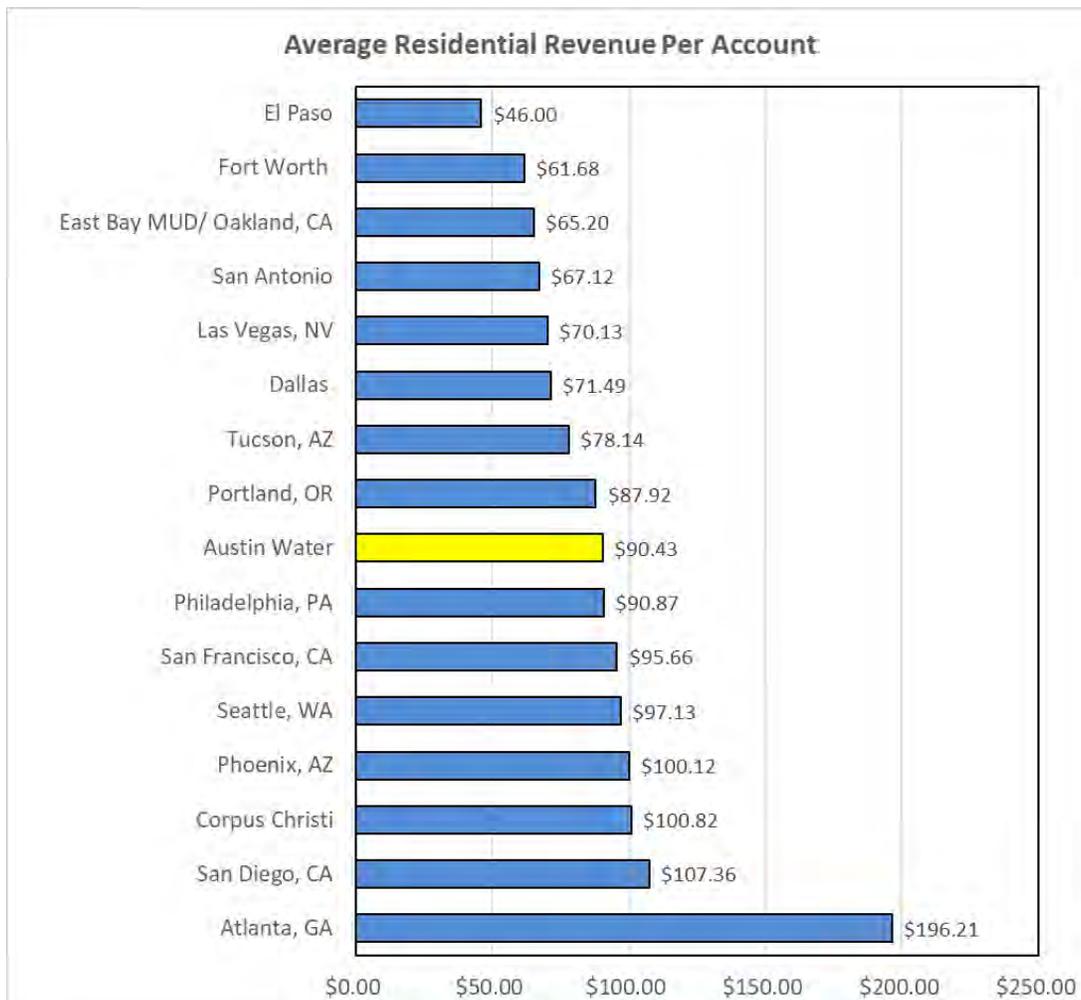
Revenue per account is a useful way to compare the average bill between utilities without making an assumption about the volume of water consumption or billed wastewater flow. It also captures the revenue generated by high volume residential customers. Notwithstanding the high volume residential customer bills shown in Benchmark 3, customers with greater than 10,000 gallons of water consumption or 5,000 gallons of billed wastewater flow are not captured in any of the other benchmarks discussed in this report.

Further, for utilities with steep inclining block rates, such as Austin Water, the bill for average water consumption may be below the embedded cost of providing this service, which can lead to an incomplete picture of the overall bill impact. Average revenue per account provides a benchmark that removes this limitation. Put another way, even if the residential rates fully recover the cost of providing water service as a customer class, Austin Water would not fully recover its cost of providing water service if it charged each residential customer the bill calculated based on average water consumption (as shown in Benchmark 1). However, assuming residential rates fully recover the cost of providing water service as a customer class, Austin Water would fully recover its cost of providing service if it charged each residential customer the bill calculated based on average revenue per account.

The calculation of the average revenue per account is based on total residential water or wastewater revenue for a year, divided by 12 months in a year, and then divided by the total number of residential water or wastewater customers. This yields an average bill for water or wastewater, inclusive of all residential customers.

Figure 18 provides the residential average revenue per account for the cities who provided this information for the study. This benchmark looks at only the residential revenue per account, eliminating any variances within cities related to their rate structures. This information is generally not available through any online sources for the cities. The total residential revenue and number of residential accounts must be obtained from each of the cities through email or direct contact with the appropriate staff within each city. As this information is obtained in future updates, it is possible that the building of relationships within each of the cities would make the updates easier and less time intensive. Austin Water also promises to each of the cities that any information we obtain for these benchmarks would be made available to all of those cities that participated, providing an incentive for the cities to provide this information.

Figure 18: Average Residential Revenue Per Account



Alternative Affordability Benchmarks

6. Austin Water Historical Rate Increase Index versus Water Industry Index

Advantages:

- Easy to obtain data and calculate
- Good option for tracking changes in costs over time
- Compares changes in water and wastewater bills with costs for other utilities as well as for the industry overall
- Consistent with current Austin Energy affordability benchmark

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Not a great gauge of affordability given it does not consider income
- Conveys no information about the dollar amount of the bill being paid by customers or its relationship to income
- Subjective nature of the start year and its meaningful influence on the results

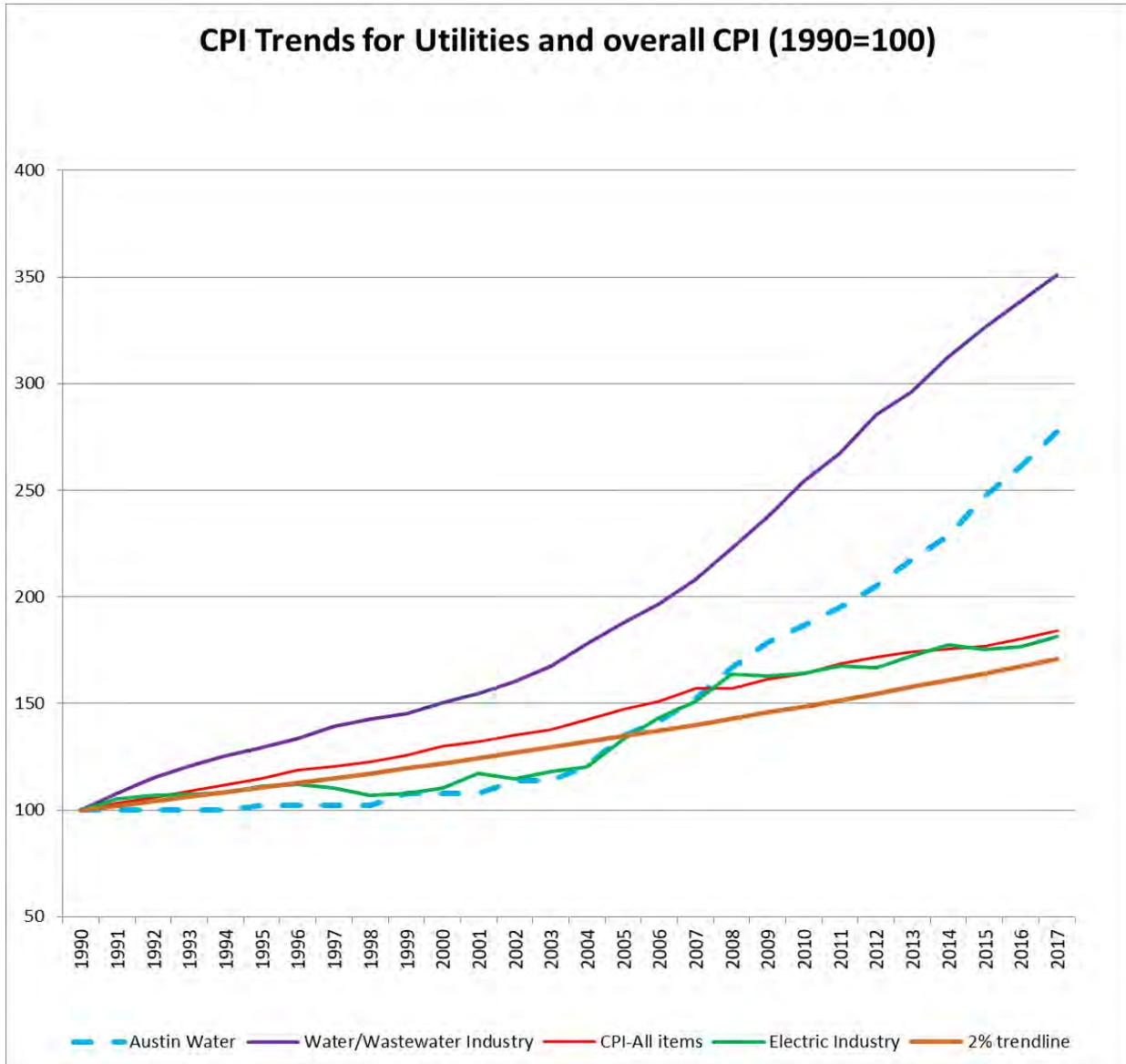
This alternative affordability benchmark does not specifically compare Austin Water to other cities, but does compare Austin Water's historical water and wastewater rate increases to the water industry cost index, consumer price index, and the electric industry cost index. This benchmark provides a longer-term view of affordability at Austin Water and the industry. Additionally, a 2% annual cost increase trendline is included to compare to these other indices. The index calculation uses the year 1990 as a starting point of 100 for each of the shown indices. Information on each of these indices is readily available from federal agency websites.

Figure 19 provides an industry trend analysis compared to Austin Water's historical rate increases. The water industry index since 1990 has risen faster than Austin Water rates, the electric industry index, and CPI. As seen in the similar index graph in Figure 1 of this report, the water industry index has also risen faster than the gas, cable and telecom industries indices.

Figure 19 shows that during the 1990s, Austin Water had mostly no rate increases, while the water industry, as a whole, continued to have rate increases. Austin Water was able to achieve these results primarily by deferring investment in capital infrastructure. However, during the 2000s and beyond, Austin Water had to invest significantly in capital infrastructure through the Austin Clean Water Program, system improvements, and Water Treatment Plant 4. Austin Water experienced 14 years of consecutive rate increases from 2004 through 2017, however the Austin Water index still remains below the water industry index historically. Compared to the 2% index shown in the graph, Austin Water was well below this trendline from 1990 through 2005.

Austin Water experienced no rate increase in the 2018 budget, followed by a 4.8% rate reduction budget amendment during 2018, effective May 1, 2018. Looking into the future, Austin Water has proposed no rate increase for the 2019 budget and projects no rate increase in the 2020 budget. Additionally, Austin Water is only projecting a total 4% rate increase through 2023, a 2% increase in FY 2021 and another 2% increase in 2023. Over time, these actions will start bending Austin Water's rate increase index downward towards the 2% annual index trendline.

Figure 19: Cost Trends for Austin Water, Utilities and Consumer Price Index



Alternative Affordability Benchmarks

7. Affordability Ratio 20 (AR₂₀)

Advantages:

- Provides a good indication of the impact of bills on low income customers
- Arguably the best measure of affordability for low income customers
- Accounts for regional variations in other essential costs (e.g., food, housing)

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Moderately time intensive to obtain data and calculate
- Requires special knowledge of how to estimate other essential costs (e.g., food, housing)
- Setting a goal can be subjective and arbitrary

The Affordability Ratio 20 (AR₂₀) is one of two benchmarks advanced in an American Water Works Association (AWWA) publication article written by Professor Manuel P. Teodoro of Texas A&M University. The title of the article is: *Measuring Household Affordability for Water and Sewer Utilities*, Journal AWWA, January 2018. The article provides a rationale for measuring the affordability of water and wastewater costs based on the impact on low-income households. The article **Measuring Household Affordability for Water and Sewer Utilities** is attached as **Appendix Attachment No. 7**.

The AR₂₀ provides a methodology for measuring affordability with affordability defined as the ability of individual customers to pay for basic water and wastewater services after paying for other essential costs, such as food and housing. The AR₂₀ assesses what portion of a household's net disposable income is consumed by a combined water and wastewater bill for minimum service. The focus of this benchmark is on low-income customers, at the 20th income percentile, as opposed to customers represented by median household income. Further, the AR₂₀ is calculated based on basic water needs for health and sanitation, rather than average consumption.

The calculation of the AR₂₀ requires an estimate of other essential costs besides water and wastewater service. Professor Teodoro developed an estimate of essential costs for each utility benchmarked based on public-use microdata from the Consumer Expenditure Survey (CEX) available from the Bureau of Labor Statistics. Professor Teodoro fit an ordinary least squares regression to the log of essential expenditures using data from the CEX. He then used the coefficients from this regression in combination with data from the 2016 American Community Survey's five-year estimates to develop an estimate of other essential costs. Basically, he modeled a demographically "average" household for each city assuming a single-family home and a four-person household.

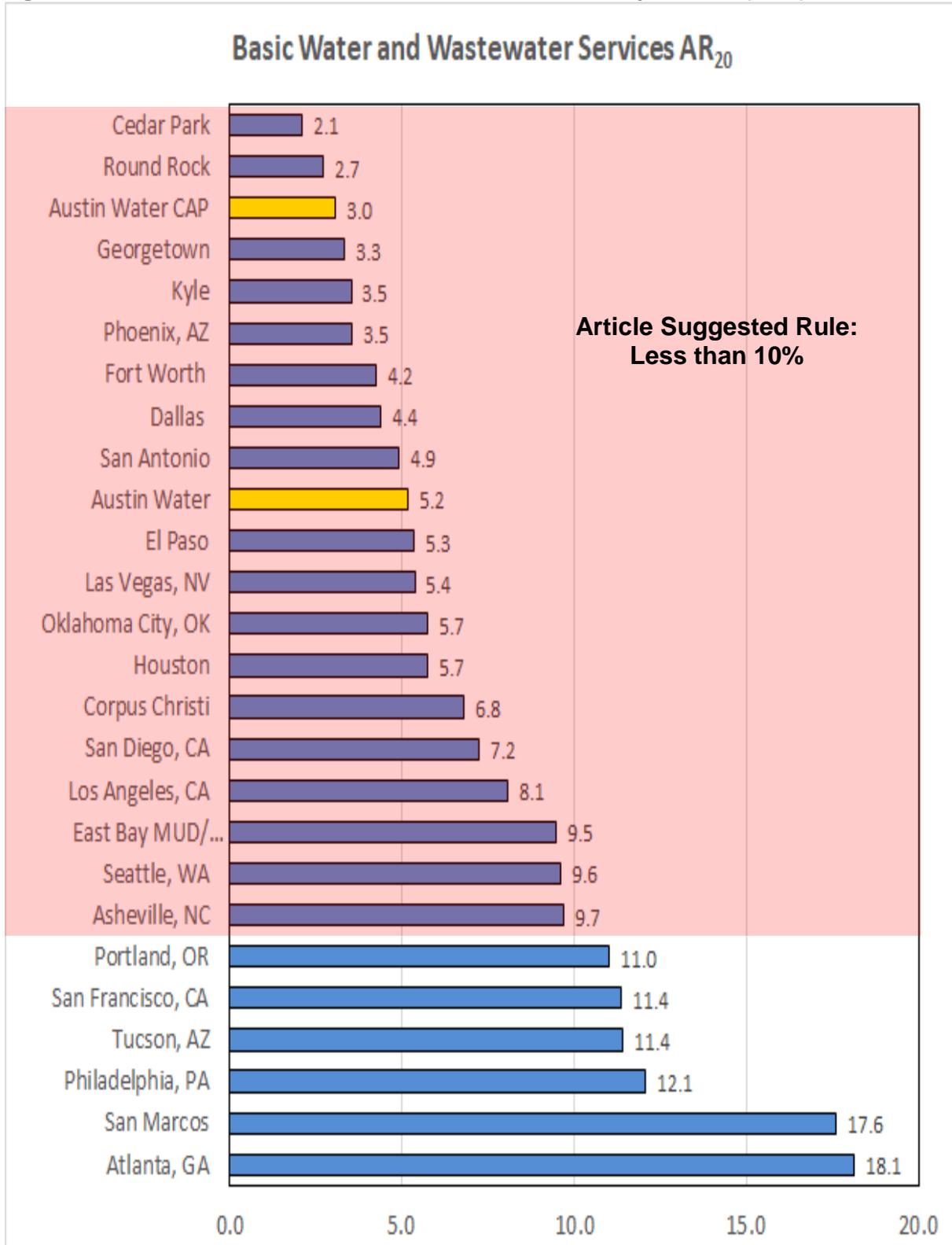
The estimate of other essential costs was subtracted from monthly 20th percentile income for each community to determine net disposable income. A combined water and wastewater bill calculated with 4,000 gallons of water consumption and 4,000 gallons of wastewater flow monthly (to represent consumption for health and satiation) was also calculated for each utility⁴. The AR₂₀ is the ratio of the combined water and wastewater bill at 4,000 gallons to the net disposable income, expressed as a percent. In his article, Professor Teodoro suggested an AR₂₀ of less than 10% as an affordability rule-of-thumb. In other words, a combined water and wastewater bill for basic water needs should not exceed more than 10% of a low income household's net disposable income. This 10% threshold is meant as a point of departure for deliberation over affordability policy.

The AR₂₀ Benchmark is somewhat harder to calculate given the need to obtain information and estimate the essential spending for each city. While data used for the estimation of essential spending in each city is available on federal agency websites, the author of the AWWA article still performs a regression analysis annually as new data becomes available. This process would likely have to be provided by a contractor each year or Austin Water staff would have to become sufficiently familiar with the technique to be able to conduct the analysis independently.

Figure 20 provides the AR₂₀ comparisons for all the benchmark cities. Professor Teodoro has suggest an AR₂₀ value of 10% as a rule of thumb to guide policy development, but there is no specific value that is universally applicable. This benchmark is not widely used at this time by other utilities. The City of Phoenix uses this metric and has adopted 10% as its affordability guideline. Austin Water AR₂₀ for a typical residential bill for basic water and wastewater services is at 5.2%, which is in compliance with the 10% suggested level. The Austin Water CAP bill is at 3.0%, which is an even better result. Of the cities included in the benchmark, only two cities, Round Rock and Cedar Park, are below Austin Water CAP customers.

⁴ In his AWWA article, Professor Teodoro assumed a four-person household, 50 gallons per capita per day consumption, and a 31 day month, which equates to 6,200 gallons monthly.

Figure 20: Basic Water and Wastewater Services Affordability Ratio 20 (AR₂₀)



Alternative Affordability Benchmarks

8. Hours Minimum Wage (HM)

Advantages:

- Easy to obtain data and calculate
- Provides a good indication of the impact of bills on low income customers
- Accounts for regional variations in minimum wage

Disadvantages:

- Does not account for the myriad differences in utilities, their source of water, treatment processes, conservation commitments, community values, etc.
- Setting a goal can be subjective and arbitrary

The Hours Minimum Wage (HM) is one of two benchmarks advanced in an American Water Works Association (AWWA) publication of an article written by Professor Manuel P. Teodoro of Texas A&M University. The title of the article is: *Measuring Household Affordability for Water and Sewer Utilities*, Journal AWWA, January 2018. The article provides a rationale for measuring the affordability of water and wastewater costs based on the impact on low-income households. The article **Measuring Household Affordability for Water and Sewer Utilities** is attached as **Appendix Attachment No. 7**.

The HM simply takes a combined water and wastewater bill calculated with 4,000 gallons of water consumption and 4,000 gallons of wastewater flow monthly (to represent consumption for health and satiation) for each utility and divides it by the minimum wage per hour in each community⁵. This indicates how many hours a person must work at minimum wage (ignoring taxes) in order to pay for the combined water and wastewater bill at 4,000 gallons. In his article, Professor Teodoro suggested a HM of less than 8 hours as an affordability rule-of-thumb. The intuition behind this threshold is that nobody should have to work for longer than one standard work day at minimum wage in order to afford their combined water and wastewater bill.

The Hours Minimum Wage benchmark is generally easy to calculate given the availability of information on minimum wage and the ease of calculating bills for basic service. However, this benchmark is not widely used in the industry. Additionally, the minimum wage has historically remained relatively constant over longer periods of time, making the results of this benchmark likely to trend higher as bills rise.

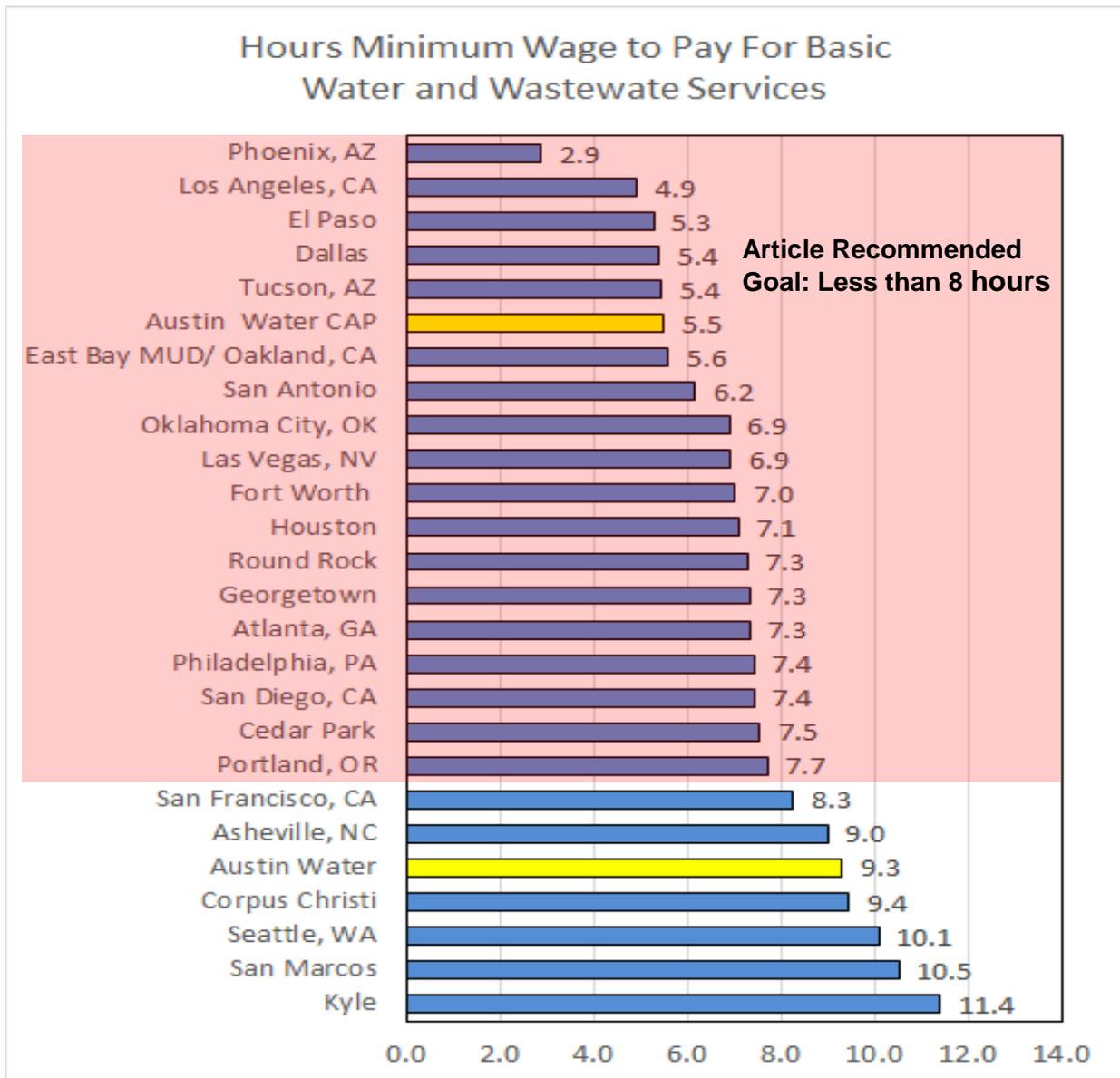
Figure 21 provides the Hours and Minimum Wage comparison for all the benchmark cities. While the goal of less than eight hours has been suggested by Professor Teodoro, the optimal goal is still open to debate.

⁵ In his AWWA article, Professor Teodoro assumed a four-person household, 50 gallons per capita per day consumption, and a 31 day month, which equates to 6,200 gallons monthly.

Additionally, a family of four people using basic water service and relying on income from only one family member making minimum wage might be an unrealistic household income assumption, but it does attempt to reflect a worst-case scenario. For Austin, this level of income would be equivalent to 60% of the 20th percentile median household income.

Austin Water's HM for a typical residential bill for basic water and wastewater services is at 9.3 hours which is above the suggested 8 hour goal. However, Austin Water's CAP bill is at 5.3 hours, with only 5 cities with lower results.

Figure 21: Hours Minimum Wage for Basic Water and Wastewater Services



Affordability Benchmark Recommendations

Austin Water has compiled the data and analyzed the results of the eight affordability benchmarks detailed above. In developing these recommendations, Austin Water has considered the degree of difficulty to compile the data needed, the ease of understanding the benchmark, and whether the benchmark will provide an ongoing benefit for future review.

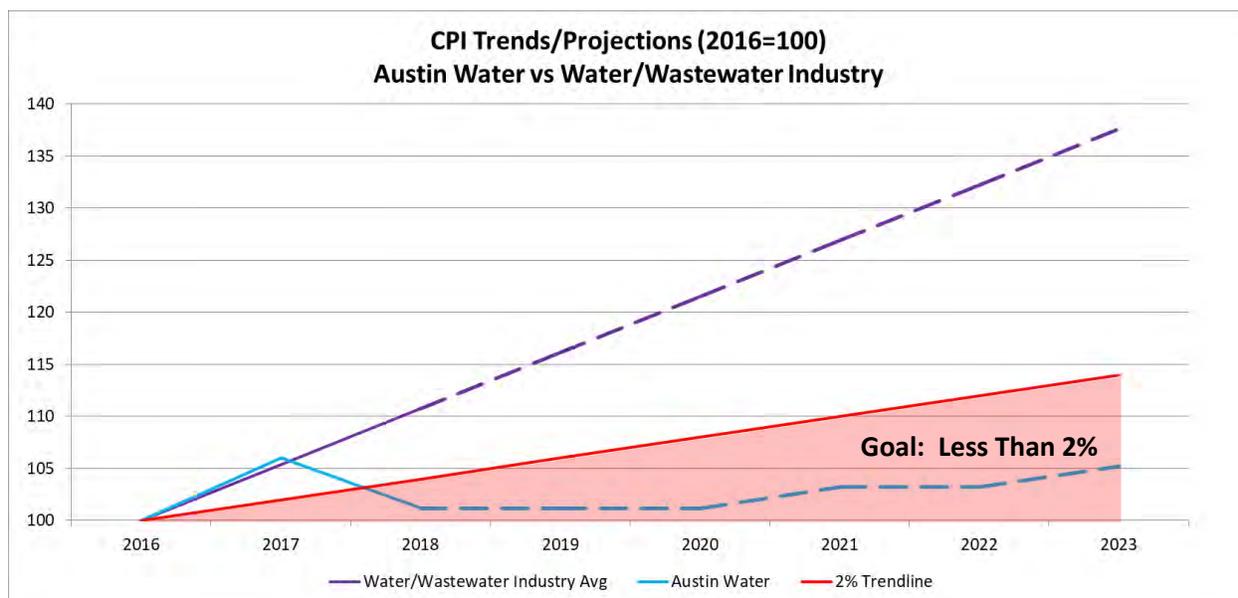
From this study of the possible affordability benchmarks, Austin Water has developed recommendations for continued evaluations and reporting of the following four affordability benchmarks. Also, Austin Water has developed recommendations on the ongoing tracking and communication of these benchmarks to Council and our customers.

Recommendation: Austin Water Historical Rate Increase Index

This proposed benchmark is a variation of the No. 6 benchmark detailed above. The proposed benchmark would include a comparison of the Austin Water rate increases, the water and wastewater industry index, and a reference 2% annual rate increase trendline. Each of these indices would be calculated using a base year of 2016. The goal for this benchmark would be for Austin Water to remain under the 2% annual rate increase trendline. This goal represents approximately 50% of the current water and wastewater industry index historical trend. This benchmark would be consistent with the current Austin Energy benchmark of remaining below a 2% annual rate increase trend.

Figure 22 provides the recommended affordability benchmark graph. For 2016 and 2017, Austin Water was trending along the water and wastewater industry index level and above the 2% annual rate increase trendline. However, in the FY 2018 Approved Budget, Austin Water submitted a 0% rate increase and subsequently amended the budget in April 2018 to propose the Council approved 4.8% rate reduction. With this rate reduction in 2018, Austin Water rates are below both the water and wastewater industry index and the 2% annual rate increase trendline. The graphic also provides for a projection of these indices through 2023. The water and wastewater industry index used a historical 15 year average increase to project through 2023. The Austin Water rates are based on Austin Water's Financial Forecast submitted to Council in April 2018, which projected future rate increases.

Figure 22: Cost Trends for Austin Water, Industry and 2% Trendline



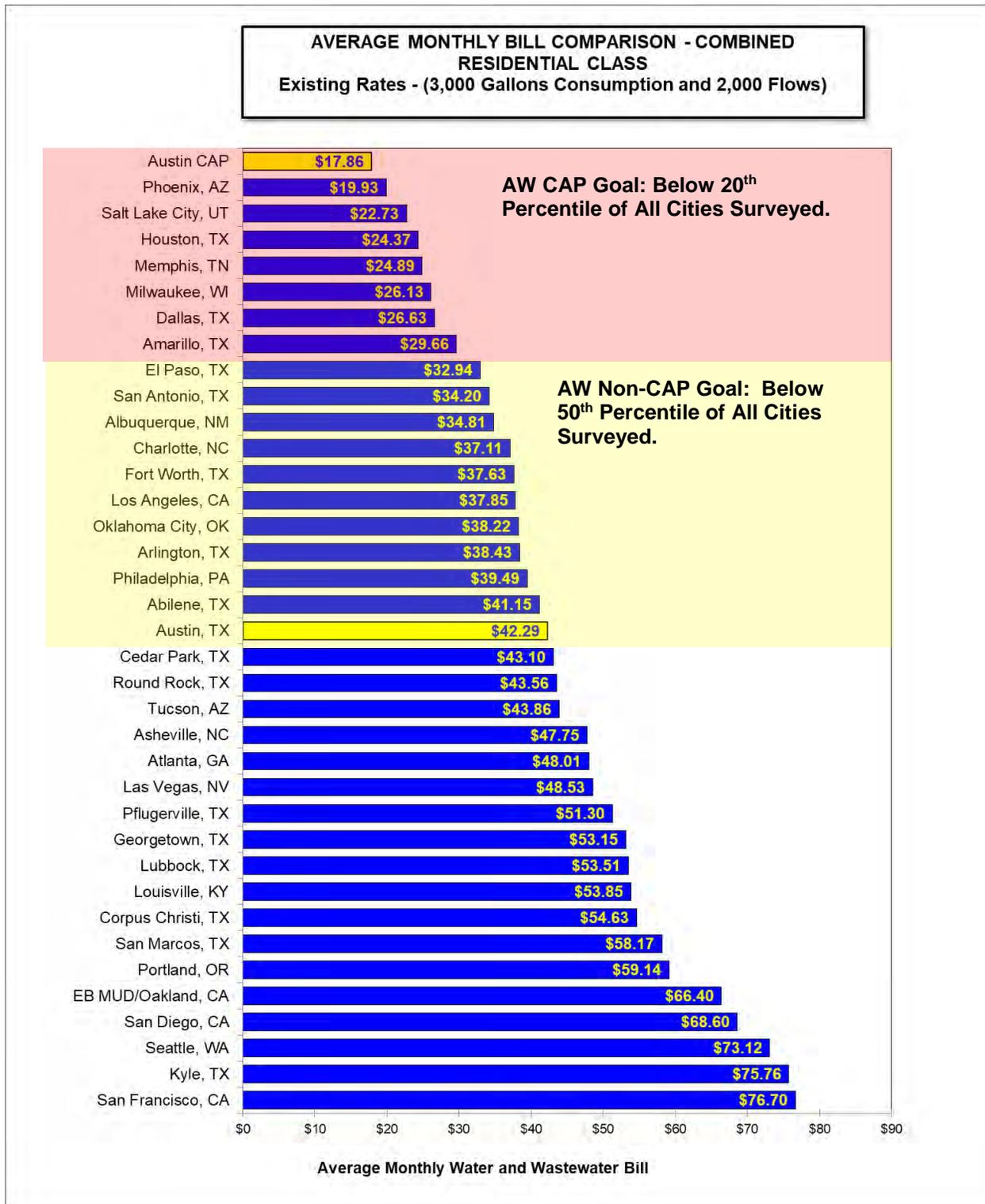
Recommendation: Residential Low Volume User Bill Comparison

This proposed benchmark is the low volume user bill comparison from benchmark No. 3 detailed above. This low volume bill comparison of Texas and national cities uses combined water and wastewater bills based on customers using 3,000 gallons of water and 2,000 gallons of wastewater. The comparison of low volume bills is consistent with Austin Water's rate structure goals to promote water conservation and provide affordable basic water services to our customers. The CAP customer bill at low volumes should be at affordable levels so the most vulnerable low-income customers have access to basic water services at affordable costs. This benchmark is generally easy to calculate as the required rate information is typically available from each of the cities' websites.

Figure 23 provides the recommended affordability benchmark graph. Austin Water proposes a goal of low-volume CAP residential customer bills being below the 20th percentile of all cities surveyed. Currently, Austin Water CAP residential low-volume bills are the lowest of all Texas and national cities surveyed. This is due to the significant fixed fee and volumetric bill discounts provided to CAP customers.

For non-CAP residential customer bills, Austin Water proposes a goal of being in the bottom half of all Texas and national cities surveyed. Currently, Austin Water is ranked 18th out of the 36 cities surveyed, exactly at the 50% level. As Austin Water's rates are projected not to increase until FY 2021 at the earliest, it is expected that our ranking within this benchmark will continue to improve.

Figure 23: Low Volume Bill Comparison – Residential



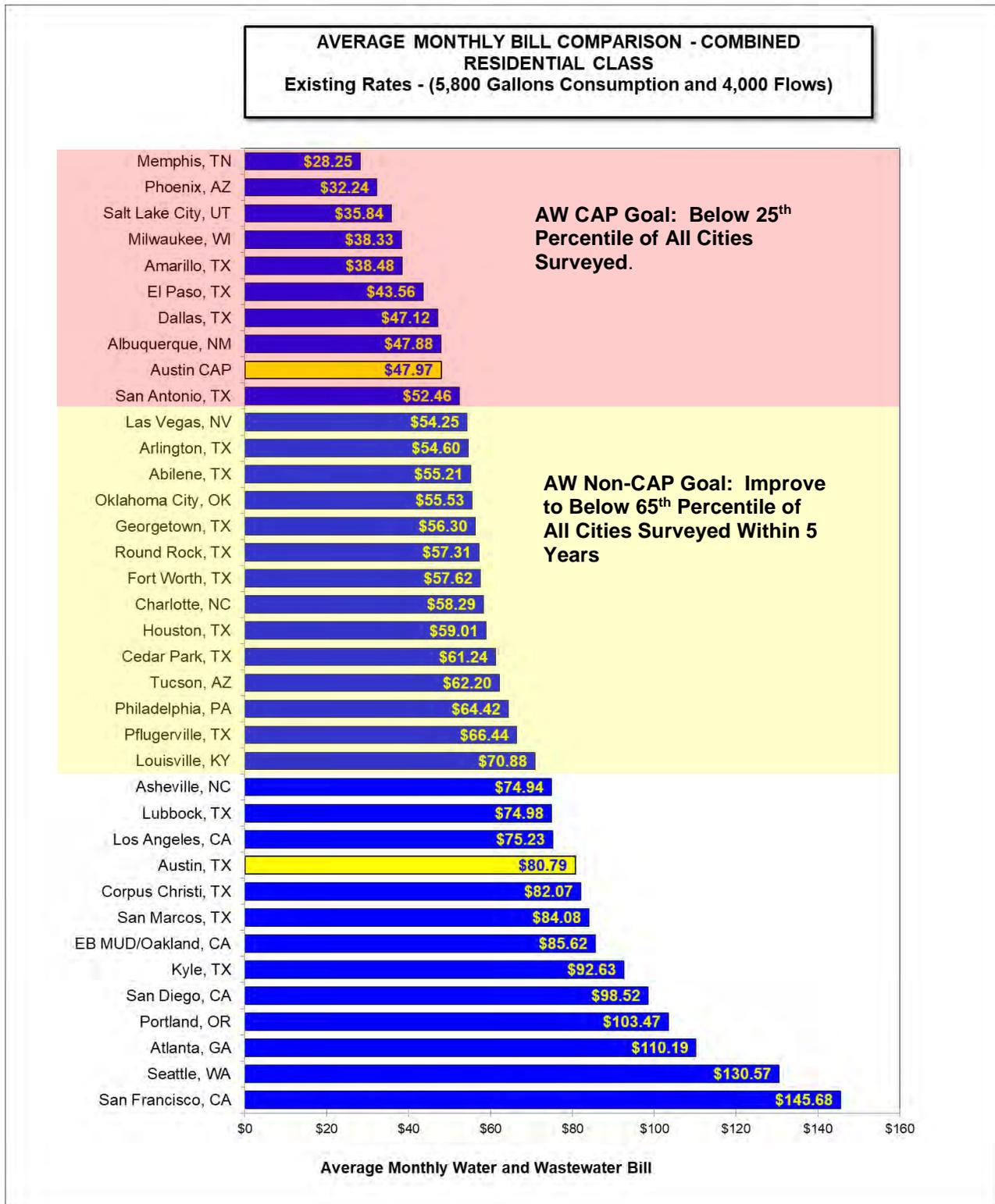
Recommendation: Residential Average Customer Bill Comparison

This proposed affordability benchmark, one that is currently tracked by Austin Water, is the residential average customer bill comparison. This benchmark compares combined residential water and wastewater bills at the current Austin Water average residential customer usage levels of 5,800 gallons of water consumption and 4,000 gallons of wastewater discharge per month. Approximately 65% of Austin Water's customers have bills that are at these levels of usage or below. Comparing combined bills at these levels is consistent with Austin Water's rate structure goals to promote aggressive water conservation by our customers. The rate schedule information needed to complete this benchmark is generally easily obtainable from each cities' websites. In also showing the Austin Water CAP customer bill, this benchmark highlights the affordability of our water services to our most vulnerable low-income customers.

Figure 24 provides the recommended affordability benchmark graph. Austin Water proposes a goal for our CAP residential average bills at or below the 1st quartile, or lower 25%, of all Texas and national cities surveyed. Currently, Austin Water's CAP bill is within this 1st quartile goal, ranking 9th out of 36 cities surveyed.

For our non-CAP residential average bills, Austin Water proposes an interim goal of improving to below the 65th percentile of all Texas and national cities surveyed over the next five years. Currently, Austin Water's average residential bill is at the 75th percentile, ranking 27th out of 36 cities surveyed. Over the next five years, Austin Water anticipates significant improvement within this benchmark given the projection of no rate increases over the next two years and with minimal rate increases after that.

Figure 24: Average Monthly Bill Comparison – Residential

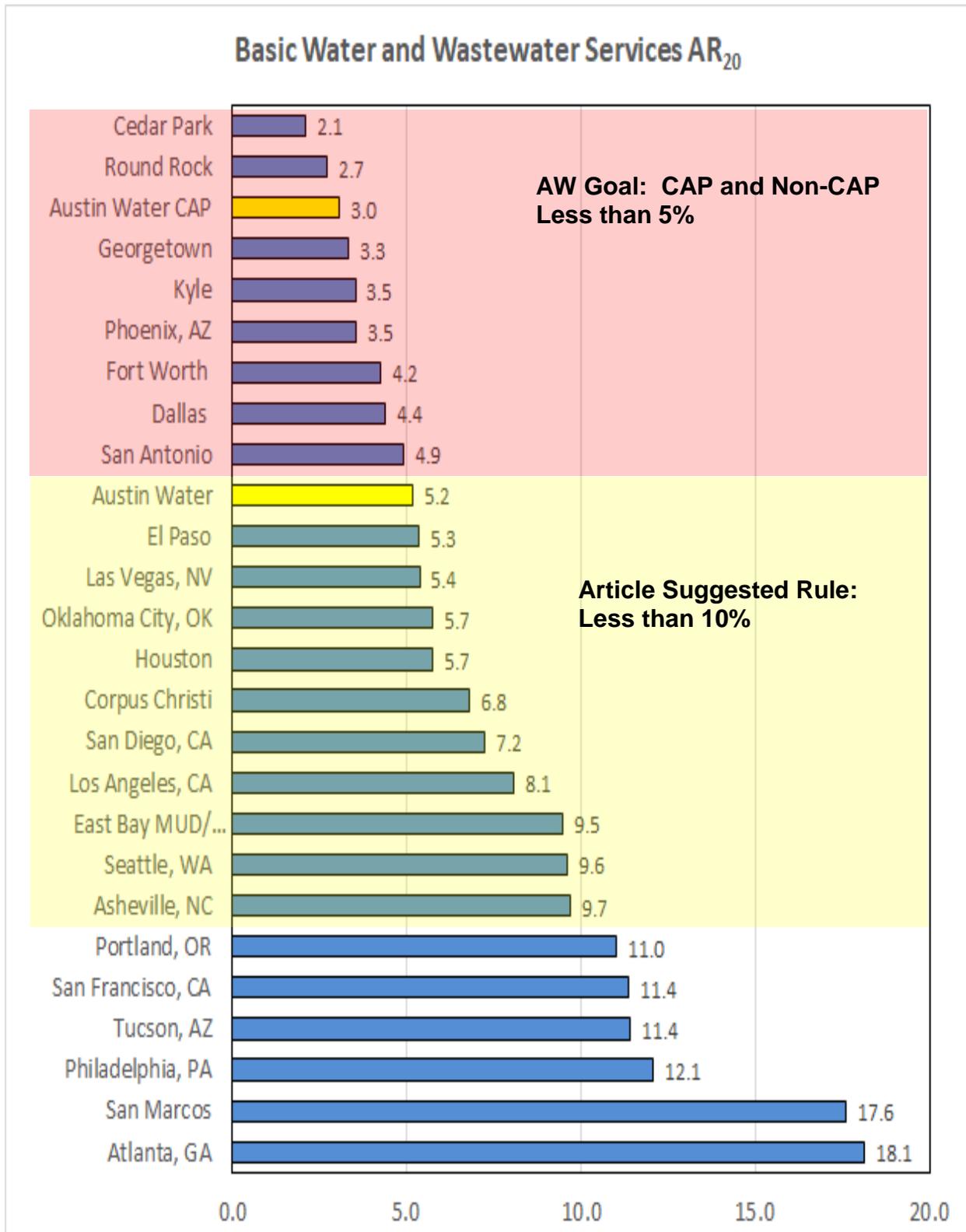


Recommendation: Affordability Ratio (AR₂₀)

This proposed affordability benchmark is the Affordability Ratio, or AR₂₀, which measures the ability of low-income customers to pay for basic water and wastewater services after paying for other essential costs such as food and housing. The focus is on low-income customers who are at the 20th percentile of household income, as opposed to looking at customers at the higher median household income. The level of household water and wastewater use for this benchmark is for basic health and sanitation needs, represented by 4,000 gallons of water consumption and 4,000 gallons of wastewater discharge per month. This focus on lower volume needs is presumably more representative of the basic water needs of low-income customers. This benchmark is generally easy to update each year through calculation of bills at current rates. However, the estimation of each cities' essential costs, other than water and wastewater services, can be more difficult to update annually and may require consultant assistance to provide updates.

Figure 25 provides the recommended affordability benchmark graph. As rule of thumb to guide policy development, Professor Teodoro suggests that customers at the 20th income percentile should pay no more than 20% for basic water and wastewater services after paying for other essential costs. Austin Water proposes adopting an even more affordable 5% goal for average residential CAP and Non-CAP customers. Currently, Austin Water's residential bills for basic water needs for low-income customers at the 20th percentile income level are only 5.2% of the remaining income after paying for other essential costs. This is just beyond the 5% Austin Water goal, but well below the recommended 10%. For the Austin Water CAP customer, the bill for basic water needs is only 3.0% of the remaining income after paying for other essential costs, and the lowest of any major Texas city surveyed.

Figure 25: Basic Water and Wastewater Services Affordability Ratio 20 (AR₂₀)



Recommendation: Implementation and Communication

Austin Water recommends the four proposed affordability benchmarks be updated annually as rates change for the cities. Austin Water currently updates its bill comparison survey during February of each year. Our current work on the bill comparison could be expanded to include these additional affordability benchmarks. This would allow for these affordability benchmarks to be communicated to our stakeholders – Council, Commission, customers, and interested parties. The affordability benchmarks could also be communicated throughout the forecast and budget development process during April through September. This would provide Council and Commission full transparency to changes in our affordability benchmarks. This information could also be included on Austin Water’s websites to provide additional transparency for our customers and stakeholders. Austin Water is currently planning to add an affordability section to our website. These benchmarks could be prominently displayed as part of this information.

It is also likely that Austin Water will continue, or begin, to update some of the other affordability benchmarks such as the percent of Median Household Income, High Volume Bill Comparisons and the Hours of Minimum Wage. These additional affordability benchmarks still provide benefit to Austin Water and inform our understanding of rate impacts.

APPENDIX

- Attachment No. 1** **City Council Resolution No. 20180201-068**
- Attachment No. 2** **Affordability Study Contextual Information Matrix**
- Attachment No. 3** **Austin Water Rate Schedules**
- Attachment No. 4** **Affordability Benchmark Data Matrix**
- Attachment No. 5** **Austin Water 2018 Bill Comparison Survey**
- Attachment No. 6** **Make Water Affordable Again?**
American Water Works Association, Journal, June 2018
Wendi Wilkes, AWWA Government Affairs Office
Washington, D.C.
- Attachment No. 7** **Measuring Household Affordability for Water and Sewer Utilities**
American Water Works Association, Journal, January 2018
Professor Manuel P. Teodoro, Texas A & M University

APPENDIX

Attachment No. 1

City Council Resolution No. 20180201-068

RESOLUTION NO. 20180201-068

WHEREAS, the City of Austin owns and operates three municipal utilities: Austin Energy, Austin Water, and Austin Resource Recovery; and

WHEREAS, according to the Fiscal Year 2017/18 Taxpayer Impact Statement, the services provided by those three utilities will cost the average Austin resident approximately \$2,475; and

WHEREAS, in 2010, the City of Austin, by benchmarking residential, commercial, and industrial electric bills across the State, was able to calculate how affordable utility bills were when compared to other cities; and

WHEREAS, through that analysis, the City Council adopted Austin Energy's Affordability Goals which set a goal for Austin Energy to keep rates in the lowest 50% of Texas utilities and limit annual rate increases to no more than two percent for any customer class; and

WHEREAS, those Affordability Goals have been utilized when considering annual budgets as well as when deciding to make long-term investments for the utility; and

WHEREAS, given the differences in the energy, water, and solid waste markets and the differences in services and other factors between utilities in different cities, the goals may be different for each utility; and

WHEREAS, the City of Austin is committed to protecting the long-term viability and competitiveness of all of its municipally-owned utilities as well as ensuring affordable utility bills for all customers; and

WHEREAS, affordable utility bills are a critical part of all resident's personal monthly budgets and are an impactful piece of managing the rising cost of living in Austin; and

WHEREAS, the City of Austin has not established Affordability Goals or other standards for Austin Water or Austin Resource Recovery; and

WHEREAS, it is in the public's interest for the City to establish Affordability Goals for Austin Water and Austin Resource Recovery; **NOW, THEREFORE**,

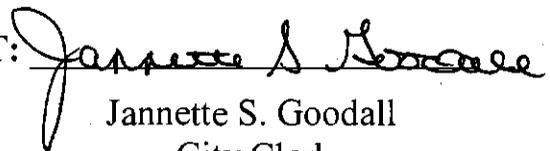
BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

The City Council directs the City Manager to provide information about internal benchmarks that the City of Austin's utilities conduct when assessing affordability and sustainability of the utilities' services to customers. The City Manager is directed to conduct a comprehensive, data-driven benchmarking study of public, and where available private, water and solid waste utilities in Texas that includes contextual information, where useful, such as efforts relating to sustainability, zero waster commitments, landfill diversion goals, conservation and drought mitigation efforts, the value of water, the source of water, purity standards, climate, and other components the City Manager deems appropriate.

Utilizing the findings of this review, the City Manager shall make recommendations for how to continue the utilities' evaluations with regard to affordability, as well as strategies for effectively communicating these ongoing efforts to customers, and how affordability goals may be reasonably determined, applied, tracked, and disclosed.

ADOPTED: February 1, 2018

ATTEST:


Jannette S. Goodall
City Clerk

APPENDIX

Attachment No. 2

Affordability Study Contextual Information Matrix

Notes:

- (a) Dallas - Operation WaterShare (OWS) is a donation program whose proceeds are used to assist Dallas citizens pay their utilities in times of need. The utilities bill has a location to indicate a donation and the amount indicated would be added to the remittance for the utilities payments. Walk-in customers can make donations in the Lobby. They still have the ability to make a donation with or without paying additional to their utilities bill. This is the only means of making a donation if the citizen does not have a utilities bill. The OWS donation program is administered through a contract with the Salvation Army. All donations are sent to the Salvation Army via a check monthly.
- (b) Portland - 50% discount to the water, sewer and stormwater bill to low income customers with less than 60% of Median Household Income; 80% discount to the water, sewer, and stormwater bill to low income customers with less than 30% of Median Household Income
- (c) Atlanta - In addition to the 30% discount for qualifying senior citizens, there is also a separate program called the Care & Conserve Program, which is for non-seniors and is a needs based bill assistance program assessed on a case-by-case basis (http://www.needhelppayingbills.com/html/atlanta_water_bill_assistance.html)
- (d) Fort Worth - There is a program to help qualifying customers pay their bill or pay for plumbing repairs; fund is, in part, from donations (<http://fortworthtexas.gov/cap/water-assistance/>)
- (e) San Antonio - The amount of discount a customer receives is based upon the household size, household income and type of service provided; The discount will range from \$4.62 to \$24.50 per month (<https://www.saws.org/service/affordability/>)
- (f) Tucson - The Limited Income Assistance Program discount is 50%. A new program offering would let the customer chose to have a flat discount amount, in lieu of the 50% discount. The current flat discount is \$18.74 (FY 2019) and will increase annually at the same percentage increase as the monthly service charge. In FY 2020 the flat discount amount will increase to \$20.41 per month. (<https://www.tucsonaz.gov/water/low-income-assistance-program>)
- (m) Pima County - The Sewer Outreach Subsidy program has a tiered discount based on income and the number of people in the household. The discount is either 25%, 50%, or 75% off the total sewer bill. (<http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=195661>)
- (g) San Diego - There is a donation funded discount that can be up to \$100/year (<https://www.sandiego.gov/publicutilities/customerservices/h2osd>)
- (h) San Francisco - Community Assistance Program service discount offers qualifying residential single-family customers a 15% discount on water and a 35% discount on sewer charges (<http://sfwater.org/index.aspx?page=131>)
- (i) Philadelphia - In addition to the 25% discount for qualifying senior citizens, there is also a separate program for non-seniors but it is not a flat 25% discount; it is based, in part, on income (<https://beta.phila.gov/services/water-gas-utilities/water-bill-customer-assistance/>)
- (j) Seattle - Has more than one program but the largest program is the Utility Discount Program, which provides a 50% discount to those earning at or below 70% of the state median income (based on household size). The second program, Emergency Assistance Program, is for more immediate bill relief for those already eligible for UDP. It provides a 50% discount on past due bills up to \$399. It can be used once per year (households with minors can use it twice per year) (<http://www.seattle.gov/humanservices/services-and-programs/utility-discount-program> and <http://www.seattle.gov/util/MyServices/MyAccount/GetHelpwithUtilityBill/EmergencyAssistance/index.htm>)
- (k) El Paso - looking at implementing a low income discount program in the next year or two
- (l) East Bay MUD - Eligible customers may qualify for 50 percent off of the standard bimonthly service charge and 50 percent off of the home water use in each eligible household, up to a maximum of 1,050 gallons per person per month; a 35 percent discount on EBMUD wastewater service charge and flow charges collected will be applied to the account (<http://www.ebmud.com/customers/billing-questions/financial-assistance/customer-assistance-program/>)
- (m) Houston - Does have a Water Aid To Elderly Residents (W.A.T.E.R. Fund) program, which is entirely donor supported (but the City picks up the administrative costs), and will pay up to \$100 per six months against a customer's account. Reapplication and proof of income is needed semi-annually. 80% of the fund disbursements must go to senior citizens, 5% to the disabled, and the remaining 15% may pay for any low-income residents. Qualifying low income is total household income at or below the current year's federal poverty guideline.
- (n) Pima County has 401 households receiving the 25% discount, 715 households receiving the 50% discount, and 2,275 households receiving the 75% discount
- (o) Dallas does not have a General Fund Transfer. However, it does have an approximately \$8.2 million annual transfer for services provided by other City departments; an approximately \$3.1 million annual transfer for shared General Fund costs; an approximately \$34.2 million annual street rental payment (based on 6% of retail revenue); and an approximately \$23.2 million annual PILOT (based on asset values and ad valorem tax rates).
- (p) Phoenix - The customer assistance program is administered by the Community Services Department. Funds are reserved so that customers are able to apply for assistance through Community Services, but there is no discounted rate for low income customers.
- (q) Round Rock - Complies with the 60+ no penalty policy, which allows 14 extra days to pay without penalty. Also have less than 100 customers who are grandfathered on a 65+ discount on their base fees and volume charge, but this is not an active program open to new customers.
- (r) Tucson - The Limited Income Assistance Program had 4,188 participants at the end of FY 2017; there are typically more participants during the winter months (December 2017 had 4,559)
- (s) Oklahoma City has a 3rd party (Salvation Army) provide assistance to customers that need help with their water bill. Customers must apply directly with the Salvation Army to be considered for assistance. Annually, the utility pays a \$10,000 administrative fee and remits all customer donations collected during the year. The City is told approximately 67% of the customers that apply receive assistance.

Legend:

	2016 Water and Wastewater Rate Survey
	City's Operating Statement
	City's CAFR
	City's Website
	2016 AWWA Benchmarking Survey
	TCEQ Public Drinking Water System Database
	TML Water Rates 2018 Survey
	Provided by utility
MHI	https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2016/
Population	https://www.census.gov

APPENDIX

Attachment No. 3

Austin Water Rate Schedules

Water & Wastewater Rates

Residential Water Customers – Monthly water charges include: billing, metering, collections, customer service, and servicing / monitoring of fire hydrants.

Meter Size	Retail Meter Equivalent Charge
5/8*	\$7.25
3/4	\$10.60
1	\$13.60
1½	\$15.50
2	\$25.40
3	\$75.10
4	\$124.80
6	\$253.80
8	\$482.20
10	\$760.20
12	\$998.40

*5/8 is the average residential customer meter size

Five-Tier Fixed Charge – Based on total billed water consumption for the billing period.

Gallons of Water	Fixed Charge
0 - 2,000 Gallons	\$1.25
2,001 - 6,000 Gallons	\$3.55
6,001 - 11,000 Gallons	\$9.25
11,001 - 20,000 Gallons	\$29.75
20,001 - over Gallons	\$29.75

Five-Tier Volume Charge – Rate is charged per 1,000 gallons of total billed water consumption for the billing period. Customers must meet qualifications for **Community Assistance Program (CAP) rates**.

Gallons of Water	Non-CAP	CAP**
0 - 2,000 Gallons	\$2.89	\$2.37
2,001 - 6,000 Gallons	\$4.81	\$4.05
6,001 - 11,000 Gallons	\$8.34	\$6.67
11,001 - 20,000 Gallons	\$12.70	\$11.51
20,001 - over Gallons	\$14.21	\$14.21

Reserve Fund Surcharge – fee goes into a restricted reserve fund to offset water service revenue shortfalls that may impact operations and services. This **\$0.05** surcharge is billed per each 1,000 gallons billed.

Community Benefit Charge – fee charged per 1,000 gallons of water billed for the billing period to Non-CAP customers to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Residential Wastewater Customers – A monthly wastewater charge of **\$10.30** includes the costs of billing, collections, customer service and other account management services.

Two-Tier Volume Charge – Rate is charged per 1,000 gallons of wastewater billed during the billing period. The amount of wastewater billed is based upon water usage during the **Wastewater Averaging period**, or monthly water consumption, whichever is lower.

Gallons of Water	Volume Charge Non-CAP	Volume Charge CAP**
0 - 2,000 Gallons	\$4.85	\$4.46
2,001 – or more Gallons	\$9.94	\$8.78

Community Benefit Charge – fee charged per 1,000 gallons of wastewater billed for the billing period to Non-CAP customers to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

**Customers must meet qualifications for Customer Assistance Program (CAP) rates.



Water & Wastewater Rates

Commercial Water Customers – Monthly water charges include: billing, metering, collections, customer service, and servicing / monitoring of fire hydrants.

Meter Size	Retail Meter Equivalent Charge	Fixed Minimum Charge	TOTAL
5/8	\$7.25	\$8.75	\$16.00
3/4	\$10.60	\$15.00	\$25.60
1	\$13.60	\$23.00	\$36.60
1½	\$15.50	\$29.00	\$44.50
2	\$25.40	\$58.00	\$83.40
3	\$75.10	\$204.00	\$279.10
4	\$124.80	\$350.00	\$474.80
6	\$253.80	\$729.00	\$982.80
8	\$482.20	\$1,400.00	\$1,882.20
10	\$760.20	\$2,217.00	\$2,977.20
12	\$998.40	\$2,917.00	\$3,915.40

Volume Unit Charge – Rate is charged per 1,000 gallons of water billed during the billing period.

Season	Charge
Off Peak (<i>November – June Bills</i>)	\$5.27
Peak (<i>July – October Bills</i>)	\$5.66

Reserve Fund Surcharge – fee goes into a restricted reserve fund to offset water service revenue shortfalls that may impact operations and services. This **\$0.05** surcharge is based on 1,000 gallons billed.

Community Benefit Charge – fee charged per 1,000 gallons of water billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Commercial Wastewater Customers – A monthly wastewater charge of **\$10.30** includes the costs of billing, collections, customer service and other account management services.

Volume Charge – A rate of **\$8.95** is charged per 1,000 gallons of wastewater billed during the billing period. The amount of wastewater billed is based upon water usage during the [Wastewater Averaging period](#), or monthly water consumption, whichever is lower.

Community Benefit Charge – fee charged per 1,000 gallons of wastewater billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.



Water & Wastewater Rates

Multi-Family Water Customers – Monthly water charges include: billing, metering, collections, customer service, and servicing / monitoring of fire hydrants.

Meter Size	Retail Meter Equivalent Charge	Fixed Minimum Charge	TOTAL
5/8*	\$7.25	\$12.50	\$19.75
3/4	\$10.60	\$21.00	\$31.60
1	\$13.60	\$33.00	\$46.60
1½	\$15.50	\$42.00	\$57.50
2	\$25.40	\$83.00	\$108.40
3	\$75.10	\$292.00	\$367.10
4	\$124.80	\$500.00	\$624.80
6	\$253.80	\$1,042.00	\$1,295.80
8	\$482.20	\$2,000.00	\$2,482.20
10	\$760.20	\$3,167.00	\$3,927.20
12	\$998.40	\$4,167.00	\$5,165.40

**5/8 is the average residential customer meter size*

Volume Unit Charge – Rate is charged per 1,000 gallons of wastewater billed during the billing period.

Season	Charge
Off Peak (November – June Bills)	\$4.53
Peak (July – October Bills)	\$5.00

Reserve Fund Surcharge – fee goes into a restricted reserve fund to offset water service revenue shortfalls that may impact operations and services. This **\$0.05** surcharge is based on 1,000 gallons billed.

Community Benefit Charge – fee charged per 1,000 gallons of water billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Multi-Family Wastewater Customers – A monthly wastewater charge of **\$10.30** includes the costs of billing, collections, customer service and other account management services.

Volume Charge – A rate of **\$8.93** is charged per 1,000 gallons of wastewater billed during the billing period. The amount of wastewater billed is based upon water usage during the [Wastewater Averaging period](#), or monthly water consumption, whichever is lower.

Community Benefit Charge – fee charged per 1,000 gallons of wastewater billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Water & Wastewater Rates

Large Volume Water Customers – Monthly water charges include: billing, metering, collections, customer service, and servicing / monitoring of fire hydrants.

Meter Size	Retail Meter Equivalent Charge
5/8	\$7.25
3/4	\$10.60
1	\$13.60
1½	\$15.50
2	\$25.40
3	\$75.10
4	\$124.80
6	\$253.80
8	\$482.20
10	\$760.20
12	\$998.40

Volume Unit Charge – Rate is charged per 1,000 gallons of water billed during the billing period.

Customer	Fixed Minimum Charge	Off Peak <i>(November – June Bills)</i>	Peak <i>(July-October Bills)</i>
NXP – Ed Bluestein	\$29,250.00	\$4.67	\$5.16
NXP – W William Cannon	\$21,400.00	\$4.73	\$5.23
Samsung	\$121,100.00	\$4.69	\$5.18
Novati	\$4,250.00	\$4.96	\$5.48
Spansion	\$22,800.00	\$5.00	\$5.52
University of Texas	\$16,350.00	\$5.27	\$5.66

Reserve Fund Surcharge – fee goes into a restricted reserve fund to offset water service revenue shortfalls that may impact operations and services. This **\$0.05** surcharge is based on 1,000 gallons billed.

Community Benefit Charge – fee charged per 1,000 gallons of water billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Large Volume Wastewater Customers – A monthly wastewater charge of **\$10.30** includes the costs of billing, collections, customer service and other account management services. Rate is charged per 1,000 gallons of wastewater billed during the billing period.

Customer	Wastewater Volume Charge
NXP – Ed Bluestein	\$8.52
NXP – W William Cannon	\$8.66
Samsung	\$7.75
Novati	\$7.74
Spansion	\$7.90
University of Texas	\$8.95

Community Benefit Charge – fee charged per 1,000 gallons of wastewater billed for the billing period to fund the Customer Assistance Program (CAP). This \$0.15 charge is billed per 1,000 gallons.

Water & Wastewater Rates

Wholesale Customers – Monthly water charges include: billing, metering, collections, customer service, and servicing / monitoring of fire hydrants.

Meter Size	Wholesale Monthly Meter Equivalent Charge
5/8	\$8.00
3/4	\$9.00
1	\$10.00
1½	\$14.00
2	\$19.00
3	\$31.00
4	\$45.00
6	\$84.00
8	\$131.00
10	\$186.00
12	\$271.00

Volume Unit Charge – Rate is charged per 1,000 gallons of water billed during the billing period. The average wholesale water rate is \$4.10

Customer	Fixed Minimum Charge	Volume Charge
Creedmoor – Maha Water Supply Corp.	\$2,800.00	\$3.89
High Valley Water Supply Corp.	\$250.00	\$3.87
Manor, City of	\$0.00	\$5.09
Marsha Water Supply Corp.	\$450.00	\$3.92
Mid-Tex Utilities (Avana Subdivision)	\$0.00	\$4.10
Morningside Subdivision	\$75.00	\$5.09
Night Hawk Water Supply Corp.	\$450.00	\$3.90
Rivercrest Water Supply Corp.	\$4,500.00	\$4.35
Rollingwood, City of	\$5,000.00	\$4.65
Southwest Water Company	\$0.00	\$4.10
Sunset Valley, City of	\$4,000.00	\$4.24
San Leanna, Village of	\$200.00	\$4.06

Customer	Total Monthly Min Charge	Volume Charge
North Austin MUD #1	\$16,652.00	\$2.75
Northtown MUD	\$12,304.00	\$2.59
Travis County WCID #10	\$38,611.00	\$2.75
Wells Branch MUD – N.A.G.C.	\$21,133.00	\$2.60

Reserve Fund Surcharge – fee goes into a restricted reserve fund to offset water service revenue shortfalls that may impact operations and services. This **\$0.10** surcharge is based on 1,000 gallons billed.



Water & Wastewater Rates

Wholesale Wastewater Customers – Monthly wastewater charges includes the costs of billing, collections, customer service and other account management services. Volume rates are charged per 1,000 gallons of wastewater billed during the billing period.

Customer	Monthly Customer Charge	Wastewater Volume Charge
Manor, City of	\$10.30	\$5.64
Mid-Tex Utilities (Avena Subdivision)	\$10.30	\$5.66
North Austin MUD #1	\$51.00	\$4.23
Northtown MUD	\$60.00	\$4.15
Rollingwood, City of	\$10.30	\$5.67
Sunset Valley, City of	\$10.30	\$5.71
Travis Co. WCID #17 – Comanche Canyon	\$10.30	\$3.98
Travis Co. WCID #17 – Steiner Ranch	\$10.30	\$3.80
Wells Branch MUD – N.A.G.C.	\$51.00	\$4.14
West Lake Hills, City of	\$10.30	\$5.68

APPENDIX

Attachment No. 4

Affordability Benchmark Data Matrix

Affordability Benchmark Matrix

Benchmarks	Austin Water	Austin Water CAP	Corpus Christi	Dallas	El Paso	Fort Worth	Houston	San Antonio	Cedar Park	Georgetown	Kyle	Round Rock	San Marcos
Customer Class Average Bill Comparison													
Residential Average Water Bill (5,800 Gals)	\$40.31	\$21.49	\$42.97	\$20.82	\$25.85	\$30.05	\$32.74	\$30.30	\$31.56	\$25.65	\$60.76	\$30.48	\$44.65
Residential Average Wastewater Bill (4,000 Gals)	\$40.48	\$26.48	\$39.10	\$26.30	\$17.71	\$27.57	\$26.27	\$22.16	\$29.68	\$30.65	\$31.87	\$26.83	\$39.43
Residential Average Combined Bill	\$80.79	\$47.97	\$82.07	\$47.12	\$43.56	\$57.62	\$59.01	\$52.46	\$61.24	\$56.30	\$92.63	\$57.31	\$84.08
Combined Bill Ranking (lowest to highest average bill)	28	9	29	7	6	17	19	10	20	15	32	16	30
Residential CAP Average Water Bill (5,800 Gals)		\$21.49	\$42.97	\$20.82	\$25.85	\$30.05	\$32.74	\$22.30	\$31.56	\$25.65	\$60.76	\$30.48	\$44.65
Residential CAP Average Wastewater Bill (4,000 Gals)		\$26.48	\$39.10	\$26.30	\$17.71	\$27.57	\$26.27	\$13.16	\$29.68	\$30.65	\$31.87	\$26.83	\$39.43
Residential CAP Average Combined Bill		\$47.97	\$82.07	\$47.12	\$43.56	\$57.62	\$59.01	\$35.46	\$61.24	\$56.30	\$92.63	\$57.31	\$84.08
Combined CAP Bill Ranking (lowest to highest average bill)		13	32	10	9	32	23	4	24	19	34	20	33
Multifamily Average Water Bill (127,500 Gals)	\$682.69		\$1,009.20	\$537.00	\$433.39	\$480.95	\$544.44	\$578.68	\$483.30	\$382.50	\$1,095.39	\$414.36	\$1,073.60
Multifamily Average Wastewater Bill (108,000 Gals)	\$990.94		\$377.10	\$468.66	\$336.78	\$616.50	\$668.30	\$419.47	\$353.92	\$363.90	\$442.43	\$411.38	\$820.87
Multifamily Average Combined Bill	\$1,673.63		\$1,386.30	\$1,005.66	\$770.17	\$1,097.45	\$1,212.74	\$998.15	\$837.22	\$746.40	\$1,537.82	\$825.74	\$1,894.47
Combined Bill Ranking (lowest to highest average bill)	28		26	15	4	20	23	14	9	3	27	7	31
Commercial Average Water Bill (51,000 Gals)	\$329.88		\$412.23	\$223.66	\$218.49	\$220.16	\$228.22	\$268.80	\$234.47	\$198.18	\$485.60	\$205.46	\$450.75
Commercial Average Wastewater Bill (44,000 Gals)	\$410.70		\$242.15	\$201.78	\$173.35	\$262.28	\$279.18	\$181.58	\$155.52	\$149.75	\$190.91	\$194.42	\$359.43
Commercial Average Combined Bill	\$740.58		\$654.38	\$425.44	\$391.84	\$482.44	\$507.40	\$450.38	\$389.99	\$347.93	\$676.51	\$399.88	\$810.18
Combined Bill Ranking (lowest to highest average bill)	30		27	12	7	19	22	15	6	5	29	9	31
Residential Average Bill as Percentage of Median Household Income													
Total Annual Water and Wastewater Residential Bills	\$969.48		\$984.84	\$565.44	\$522.72	\$691.44	\$708.12	\$629.52	\$734.88	\$675.60	\$1,111.56	\$687.72	\$1,008.96
Adjusted Median Household Income for each City	\$63,302		\$54,176	\$46,968	\$45,002	\$57,004	\$48,833	\$50,051	\$90,857	\$66,748	\$74,990	\$76,960	\$32,186
Percentage Total Bills to Median Household Income	1.53%		1.82%	1.20%	1.16%	1.21%	1.45%	1.26%	0.81%	1.01%	1.48%	0.89%	3.13%
Percentage MHI Ranking (lowest to highest percentage)	22		27	13	10	15	20	17	2	8	21	5	36
Residential Low and High Volume Bill Comparison													
Residential Low Volume Combined Bill (3,000 gals. Water/2,000 gals. Wastewater)	\$42.29	\$17.86	\$54.63	\$26.63	\$32.94	\$37.63	\$24.37	\$34.20	\$43.10	\$53.15	\$75.76	\$43.56	\$58.17
Combined Low Volume Ranking (lowest to highest combined bill)	19	1	30	7	9	13	4	10	20	27	36	21	31
Residential High Volume Combined Bill (10,000 gals. Water/5,000 gals. Wastewater)	\$127.45	\$83.92	\$119.57	\$70.73	\$65.13	\$79.55	\$87.29	\$79.86	\$80.48	\$66.05	\$128.00	\$71.16	\$117.71
Combined High Volume Ranking (lowest to highest combined bill)	30	18	29	11	7	14	20	16	17	9	31	12	28
Residential CAP Customer Average Bill as Percentage of 80% Median Household Income (%80%MHI)													
Total Annual Water and Wastewater Residential Bills		\$575.64	\$984.84	\$565.44	\$522.72	\$691.44	\$708.12	\$425.52	\$734.88	\$675.60	\$1,111.56	\$687.72	\$1,008.96
80% Adjusted Median Household Income for each City		\$50,642	\$43,341	\$37,574	\$36,002	\$45,603	\$39,066	\$40,041	\$72,686	\$53,398	\$59,992	\$61,568	\$25,749
Percentage Total Bills to Median Household Income		1.14%	2.27%	1.50%	1.45%	1.52%	1.81%	1.06%	1.01%	1.27%	1.85%	1.12%	3.92%
Percentage MHI Ranking (lowest to highest percentage)		8	33	19	16	21	27	4	2	12	28	6	36
Total Residential Customer Class Average Revenue Per Account													
Total Annual Residential Water Revenue	\$124,070,523		\$39,976,206	\$117,848,084	\$55,694,849	\$91,270,259		\$215,714,000					
Total Number of Water Customers (Accounts)	205,107		80,071	251,830	184,158	223,406		465,241					
Average Residential Water Revenue Per Account (monthly)	\$50.41		\$41.60	\$39.00	\$25.20	\$34.04		\$38.64					
Total Annual Residential Wastewater Revenue	\$95,284,396		\$49,241,141	\$95,241,454	\$44,870,209	\$73,537,622		\$142,530,000					
Total Number of Wastewater Customers (Accounts)	\$198,425		\$69,288	\$244,260	\$179,731	\$221,676		\$416,996					
Average Residential Wastewater Revenue Per Account (monthly)	\$40.02		\$59.22	\$32.49	\$20.80	\$27.64		\$28.48					
Total Average Residential Revenue Per Account (monthly)	\$90.43		\$100.82	\$71.49	\$46.00	\$61.68		\$67.12					
Average Residential Revenue Per Account Ranking (lowest to highest)	9		14	6	1	2		4					
Affordability Ratio 20 (AR20)													
Basic Consumption/Flow Water and Wastewater Costs	\$67.48	\$39.52	\$68.47	\$39.31	\$38.39	\$51.01	\$51.47	\$44.79	\$54.71	\$53.15	\$82.70	\$52.83	\$76.29
20th Percentile Household Income	\$25,765	\$25,765	\$21,391	\$19,460	\$17,764	\$22,656	\$19,556	\$20,077	\$43,438	\$29,839	\$40,236	\$34,520	\$12,159
20th Percentile Monthly Income	\$2,147.08	\$2,147.08	\$1,782.58	\$1,621.67	\$1,480.33	\$1,888.00	\$1,629.67	\$1,673.08	\$3,619.83	\$2,486.58	\$3,353.00	\$2,876.67	\$1,013.25
Estimated Monthly Essential Expenses	\$840.78	\$841	\$776.45	\$720.23	\$761.18	\$685.05	\$732.82	\$763.20	\$1,023.51	\$880.19	\$1,007.11	\$927.36	\$579.88
Monthly Disposable Income	\$1,306.31	\$1,306.31	\$1,006.13	\$901.44	\$719.15	\$1,202.95	\$896.85	\$909.88	\$2,596.32	\$1,606.04	\$2,345.89	\$1,949.31	\$433.37
AR20 Ratio	5.2	3.0	6.8	4.4	5.3	4.2	5.7	4.9	2.1	3.3	3.5	2.7	17.6
AR20 Ranking (lowest to highest)	10	3	15	8	11	7	14	9	1	4	5	2	25
Hours Minimum Wage (HM)													
Basic Consumption/Flow Water and Wastewater Costs	\$67.48	\$39.52	\$68.47	\$39.31	\$38.39	\$51.01	\$51.47	\$44.79	\$54.71	\$53.15	\$82.70	\$52.83	\$76.29
Minimum Wage Per Hour	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25	\$7.25
Number of Hours at Minimum Wage to Pay for Basic Services	9.3	5.5	9.4	5.4	5.3	7.0	7.1	6.2	7.5	7.3	11.4	7.3	10.5
HM Ranking (lowest to highest rank)	22	6	23	4	3	11	12	8	18	14	26	13	25

Affordability Benchmark Matrix

Benchmarks	Phoenix, AZ	Tucson, AZ	East Bay MUD/ Oakland, CA	Los Angeles, CA	San Diego, CA	San Francisco, CA	Atlanta, GA	Las Vegas, NV	Asheville, NC	Oklahoma City, OK	Portland, OR	Philadelphia, PA	Seattle, WA
Customer Class Average Bill Comparison													
Residential Average Water Bill (5,800 Gals)	\$14.63	\$34.68	\$52.61	\$49.56	\$63.95	\$74.86	\$41.14	\$34.49	\$41.58	\$32.55	\$48.50	\$40.24	\$58.59
Residential Average Wastewater Bill (4,000 Gals)	\$17.61	\$27.52	\$33.01	\$25.67	\$34.57	\$70.82	\$69.05	\$19.76	\$33.36	\$22.98	\$54.97	\$24.18	\$71.98
Residential Average Combined Bill	\$32.24	\$62.20	\$85.62	\$75.23	\$98.52	\$145.68	\$110.19	\$54.25	\$74.94	\$55.53	\$103.47	\$64.42	\$130.57
Combined Bill Ranking (lowest to highest average bill)	2	21	31	27	33	31	35	11	25	14	34	22	36
Residential CAP Average Water Bill (5,800 Gals)	\$14.63	\$17.34	\$26.31	\$49.56	\$63.95	\$63.63	\$28.80	\$34.49	\$41.58	\$32.55	\$24.25	\$26.24	\$29.30
Residential CAP Average Wastewater Bill (4,000 Gals)	\$17.61	\$13.76	\$21.46	\$25.67	\$34.57	\$46.03	\$48.34	\$19.76	\$33.36	\$22.98	\$27.49	\$15.77	\$35.99
Residential CAP Average Combined Bill	\$32.24	\$31.10	\$47.76	\$75.23	\$98.52	\$109.66	\$77.13	\$54.25	\$74.94	\$55.53	\$51.74	\$42.01	\$65.29
Combined CAP Bill Ranking (lowest to highest average bill)	3	2	11	30	35	36	31	15	28	18	14	8	25
Multifamily Average Water Bill (127,500 Gals)	\$713.82	\$685.05	\$893.09	\$1,196.17	\$1,048.91	\$1,557.15	\$1,043.36	\$503.79	\$682.69	\$427.21	\$780.49	\$671.00	\$994.72
Multifamily Average Wastewater Bill (108,000 Gals)	\$449.48	\$404.93	\$410.19	\$693.05	\$741.24	\$1,886.65	\$2,248.13	\$592.80	\$693.10	\$477.46	\$1,484.28	\$482.06	\$1,943.42
Multifamily Average Combined Bill	\$1,163.30	\$1,089.98	\$1,303.28	\$1,889.22	\$1,790.15	\$3,443.80	\$3,291.49	\$1,096.59	\$1,375.79	\$904.67	\$2,264.77	\$1,153.06	\$2,938.14
Combined Bill Ranking (lowest to highest average bill)	22	18	24	29	29	36	35	19	25	10	33	21	34
Commercial Average Water Bill (51,000 Gals)	\$278.33	\$299.04	\$391.72	\$361.96	\$437.62	\$1,440.53	\$410.89	\$244.01	\$235.30	\$200.67	\$318.56	\$283.10	\$412.93
Commercial Average Wastewater Bill (44,000 Gals)	\$167.71	\$172.68	\$193.06	\$282.35	\$236.93	\$769.22	\$905.57	\$592.80	\$308.08	\$197.78	\$596.53	\$210.31	\$791.76
Commercial Average Combined Bill	\$446.04	\$471.72	\$584.78	\$644.31	\$674.55	\$2,209.75	\$1,316.46	\$836.81	\$543.38	\$398.45	\$915.09	\$493.41	\$1,204.69
Combined Bill Ranking (lowest to highest average bill)	14	18	25	26	28	36	35	32	24	8	33	20	34
Residential Average Bill as Percentage of Median Household Income													
Total Annual Water and Wastewater Residential Bills	\$386.88	\$746.40	\$1,027.44	\$902.76	\$1,182.24	\$1,748.16	\$1,322.28	\$651.00	\$899.28	\$666.36	\$1,241.64	\$773.04	\$1,566.84
Adjusted Median Household Income for each City	\$51,240	\$39,445	\$60,018	\$53,537	\$70,758	\$91,101	\$51,314	\$52,855	\$46,689	\$52,011	\$41,312	\$41,312	\$77,345
Percentage Total Bills to Median Household Income	0.76%	1.89%	1.71%	1.69%	1.67%	1.92%	2.58%	1.23%	1.93%	1.28%	2.05%	1.87%	2.03%
Percentage MHI Ranking (lowest to highest percentage)	1	29	25	24	23	31	35	16	32	18	34	28	33
Residential Low and High Volume Bill Comparison													
Residential Low Volume Combined Bill (3,000 gals. Water/2,000 gals. Wastewater)	\$19.93	\$43.86	\$66.40	\$37.85	\$68.60	\$76.70	\$48.01	\$48.53	\$47.75	\$38.22	\$59.14	\$39.49	\$73.12
Combined Low Volume Ranking (lowest to highest combined bill)	2	22	33	14	34	37	24	25	23	15	32	17	35
Residential High Volume Combined Bill (10,000 gals. Water/5,000 gals. Wastewater)	\$58.40	\$88.36	\$115.92	\$129.29	\$136.96	\$214.24	\$139.91	\$65.39	\$103.70	\$72.75	\$142.48	\$93.34	\$179.68
Combined High Volume Ranking (lowest to highest combined bill)	5	21	27	32	33	37	34	8	25	13	35	24	36
Residential CAP Customer Average Bill as Percentage of 80% Median Household Income (%80%MHI)													
Total Annual Water and Wastewater Residential Bills	\$386.88	\$373.20	\$573.14	\$902.76	\$1,182.24	\$1,315.97	\$925.60	\$651.00	\$899.28	\$666.36	\$620.82	\$504.12	\$783.42
80% Adjusted Median Household Income for each City	\$40,992	\$31,556	\$48,014	\$42,830	\$56,606	\$72,881	\$41,051	\$42,284	\$37,351	\$41,609	\$48,550	\$33,050	\$61,876
Percentage Total Bills to Median Household Income	0.94%	1.18%	1.19%	2.11%	2.09%	1.81%	2.25%	1.54%	2.41%	1.60%	1.28%	1.53%	1.27%
Percentage MHI Ranking (lowest to highest percentage)	1	9	10	30	29	25	32	23	35	24	14	22	13
Total Residential Customer Class Average Revenue Per Account													
Total Annual Residential Water Revenue	\$294,840,000	\$111,400,000	\$210,737,780		\$187,360,000	\$60,424,000	\$107,500,000	\$222,794,232			\$87,700,000	\$247,247,000	\$90,482,428
Total Number of Water Customers (Accounts)	392,945	210,931	361,201		224,861	361,201	110,118	350,577			153,500	407,882	168,000
Average Residential Water Revenue Per Account (monthly)	\$62.53	\$44.01	\$48.62		\$69.44	\$45.73	\$61.28	\$52.96			\$47.61	\$50.51	\$44.88
Total Annual Residential Wastewater Revenue	\$177,270,000	\$106,380,182	\$31,665,177		\$105,069,848	\$66,661,000	\$138,300,000	\$51,570,277			\$75,663,720	\$199,420,000	\$92,706,038
Total Number of Wastewater Customers (Accounts)	\$392,945	\$259,752	\$159,176		\$230,914	\$111,268	\$85,413	\$250,273			\$156,415	\$411,726	\$147,845
Average Residential Wastewater Revenue Per Account (monthly)	\$37.59	\$34.13	\$16.58		\$37.92	\$49.93	\$134.93	\$17.17			\$40.31	\$40.36	\$52.25
Total Average Residential Revenue Per Account (monthly)	\$100.12	\$78.14	\$65.20		\$107.36	\$95.66	\$196.21	\$70.13			\$87.92	\$90.87	\$97.13
Average Residential Revenue Per Account Ranking (lowest to highest)	13	7	3		15	11	16	5			8	10	12
Affordability Ratio 20 (AR20)													
Basic Consumption/Flow Water and Wastewater Costs	\$28.75	\$54.47	\$74.21	\$59.03	\$85.47	\$123.78	\$95.38	\$50.24	\$65.20	\$50.02	\$92.64	\$53.85	\$116.26
20th Percentile Household Income	\$20,760	\$15,519	\$20,540	\$19,697	\$27,489	\$26,514	\$16,407	\$22,190	\$19,687	\$21,721	\$22,471	\$14,038	\$28,952
20th Percentile Monthly Income	\$1,730.00	\$1,293.25	\$1,711.67	\$1,641.42	\$2,290.75	\$2,209.50	\$1,367.25	\$1,849.17	\$1,640.58	\$1,810.08	\$1,872.58	\$1,169.83	\$2,412.67
Estimated Monthly Essential Expenses	\$919.08	\$815.32	\$928.35	\$909.45	\$1,106.44	\$909.45	\$840.58	\$913.51	\$969.03	\$938.04	\$1,031.47	\$723.37	\$1,204.60
Monthly Disposable Income	\$810.92	\$477.93	\$783.31	\$731.97	\$1,184.31	\$1,089.79	\$526.67	\$935.66	\$671.56	\$872.04	\$841.12	\$446.47	\$1,208.07
AR20 Ratio	3.5	11.4	9.5	8.1	7.2	11.4	18.1	5.4	9.7	5.7	11.0	12.1	9.6
AR20 Ranking (lowest to highest)	6	23	18	17	16	22	26	12	22	20	13	21	19
Hours Minimum Wage (HM)													
Basic Consumption/Flow Water and Wastewater Costs	\$28.75	\$54.47	\$74.21	\$59.03	\$85.47	\$123.78	\$95.38	\$50.24	\$65.20	\$50.02	\$92.64	\$53.85	\$116.26
Minimum Wage Per Hour	\$10.00	\$10.00	\$13.23	\$12.00	\$11.50	\$15.00	\$13.00	\$7.25	\$7.25	\$7.25	\$12.00	\$7.25	\$11.50
Number of Hours at Minimum Wage to Pay for Basic Services	2.9	5.4	5.6	4.9	7.4	8.3	7.3	6.9	9.0	6.9	7.7	7.4	10.1
HM Ranking (lowest to highest rank)	1	5	7	2	17	20	15	10	21	9	19	16	24

APPENDIX

Attachment No. 5

Austin Water 2018 Bill Comparison Survey



2018 National Survey



BILL COMPARISONS For selected U.S. Cities

March 2018

Financial Management Division

Rates and Charges Team



City of Austin | Austin Water

P.O. Box 1088 Austin, TX 78767

AustinWater.org

March 7, 2018

We are pleased to submit to you the 2018 City of Austin water and wastewater rate survey results. The survey was prepared and compiled by the Rates and Charges Team of Austin Water.

The survey results packet consists of five parts. The introductory section briefly highlights the City of Austin and Austin Water's structure. The Water System and Wastewater System sections explain facility and rate structures unique to the City of Austin. The Bill Comparison Methodology section explains the manner in which the results were compiled and compared. The final section depicts the results of the survey in graphical form.

Acknowledgments

The City of Austin would like to express its appreciation to all the participating cities who assisted by submitting their completed rate surveys in a timely manner.

A handwritten signature in blue ink, appearing to read "R. Rowan".

Robert Rowan
Financial Manager II
Austin Water
(512) 972-0394



The City of Austin is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable modifications and equal access to communications will be provided upon request.



Austin Water

City of Austin

The city of Austin owns, operates and maintains its own water distribution and wastewater collection systems consisting of three water treatment plants, two wastewater treatment plants, and one biosolids facility. The city has contractual commitments with several municipal utility districts (MUDs) for the construction of certain additions, improvements, and extensions of the city's water and wastewater delivery systems. The MUDs issue contract revenue bonds to finance improvements and the city will become the owner of these improvements once complete, or when the area is annexed. This enables the city to expand its system without stand-alone utilities emerging.

Some of the information contained in this booklet and additional information about the city can be found on the Austin Water web site located at <http://www.austintexas.gov/department/water>.

Organization and Administration

The mission of Austin Water is to provide safe, reliable, high quality, sustainable, and affordable water services to our customers so that all community needs for water are met. The water and wastewater systems operate as financially self-supporting municipal utility services. They are organized as separate funds within the same department of the City of Austin's governmental structure. Austin Water's authority and responsibility is derived from Ordinance no. 000912-4 approved by the Austin City Council. The City Council adopts the annual budget, approves changes to the water and wastewater rate structures, and sets overall policy for the department.

Water and wastewater financial planning is provided by the Financial Management Division at Austin Water. The Rates and Charges Section within the Financial Management Division is responsible for rate development, revenue analysis and reporting, revenue forecasting, and recommending changes to water and wastewater rates and fees. Water and wastewater rates are designed to recover the cost of providing the various water and wastewater services by each customer class.

Water and wastewater rates are reviewed and approved by the City Council annually and the associated rate and fee schedules are adopted by ordinance. The City's principal consideration in adjusting water and wastewater rates is to maintain operations as a self-supporting enterprise. The most recent water and wastewater rate increases went into effect on January 1, 2018.

City of Austin Water System

The City of Austin water system serves more than 230,000 accounts in a service area of over 548 square miles covering both inside and outside the corporate city limits. Austin Water also supplies water to the cities of Rollingwood, Sunset Valley, and Manor, several county water control and improvement districts, water supply corporations, municipal utility districts, and private utilities.

Customers receive their drinking water from three water treatment plants that rely on surface water from the Colorado River. Austin Water treats and filters the water according to federal and state standards to

remove any harmful contaminants. The potable water is pumped through an extensive transmission and distribution system with a rated combined treatment capacity of 335 million gallons per day (mgd) and an effective storage capacity of approximately 170 million gallons.

A new water treatment facility was commissioned in December 2014 to add system capacity and reliability for the two existing water treatment plants, built in 1954 and 1969, and to meet the water demand from population growth in Austin. Water Treatment Plant 4 (WTP4) is located in northwest Austin and draws water from Lake Travis, a different source than the two current water treatment plants. In addition to the mechanical efficiencies gained from the new treatment plant, electric service costs associated with water distribution are lower because of the plant's elevated geographic location. WTP4 is capable of treating 50 million gallons a day (mgd) with room to expand the treatment capacity up to 300 mgd to accommodate for population growth and potable water demand.

The citizens of Austin have an alternative choice when it comes to purchasing water for non-potable use. Treated wastewater that would normally be returned to the Colorado River is reused and sold at a discounted rate as reclaimed water. Reclaimed water can be used for landscape irrigation, manufacturing, and other conditions where potable water is not required. Reclaimed water service currently exists for golf courses, an electric power plant, large volume and commercial irrigation, and some industrial process cooling towers. A reclaimed water tower was also added to the system to provide reclaimed water service to several local governmental entities and a residential subdivision.



Water Rate Structure

A 2016 report published by The Living Waters Project ranked the City of Austin's water conservation policies and ongoing efforts as best in the state among more than 300 Texas utilities. The environmental consortium reviewed state reports regarding water quality standards, the amount of water loss throughout the pipeline infrastructure, and evaluated water restriction guidelines. Water conservation initiatives prolong the "trigger" to purchase additional water under the existing Lower Colorado River Authority (LCRA) supply agreement and defer the need to expand capital infrastructure in the long term, a goal the utility genuinely supports. Austin Water aspires to lead the state and the nation in innovative ways to sustain our natural resources.

Water service revenue is inherently volatile because of extreme weather conditions and the success of Austin's water conservation programs. However, Austin Water has strengthened its financial position through a series of business model changes recommended by several commissions and adopted by the Austin City Council. Starting in 2015, Austin Water began to collect a greater percentage of fixed revenue from its customer base and also introduced a water reserve fund volumetric surcharge. The utility has also taken steps to manage the infrastructure growth impacts associated with population, including the implementation of a revised capital recovery fees (CRFs) system designed to recover the maximum allowed by Texas law. Since 2014, our revised CRF system has generated nearly \$54M in growth driven fees that we are using to pay and defease the debt associated with system growth. These innovative changes have not only improved the utility's financial metrics, but reinforced the City of Austin's position as a leader in conservation based pricing.

Austin Water has a residential tiered inclining rate block structure as a means to encourage conservation through water pricing. The residential volumetric rate blocks increase at the 2,000, 6,000, 11,000 and 20,000 gallon consumption intervals. The residential customer class is also billed a monthly meter

equivalent minimum charge that varies by meter size and a tiered minimum charge based on the customer's total monthly consumption. Qualified low income residential customers enrolled in the City of Austin Customer Assistance Program (CAP) receive discounted volumetric rates, as well as a waiver of the monthly meter equivalent minimum and the tiered minimum charges.

The other retail customer classes have a uniform peak (July through October) and off-peak (November through June) volumetric rate structure that is designed to encourage water conservation. The multifamily and commercial customer classes are billed a monthly meter equivalent minimum charge and a monthly fixed charge that varies by meter size. The large volume and wholesale customer classes are assessed a monthly meter equivalent minimum charge that varies by meter size and a monthly fixed minimum charge based on annual fixed revenue targets for each class.

All customer classes are billed a volumetric water Revenue Stability Reserve Fund (RSRF) surcharge per 1,000 gallons of water used. The purpose of the RSRF is to strengthen the financial stability of Austin Water by offsetting annual revenue shortfalls.

Austin Water used an average of 5,800 gallons of water per month annualized for the residential customer class when calculating the bill impact for the nationwide survey.

City of Austin Wastewater System

The City of Austin wastewater system serves more than 217,000 accounts in a service area of over 548 square miles covering both inside and outside the corporate city limits. Two wastewater treatment plants receive wastewater flow from the city's sanitary sewer collection system where contaminants are removed, and the fully treated water is discharged to the Colorado River or reused through the city's water reclamation program. The two wastewater plants have a total permitted capacity of 155 mgd.

Originally established in the 1950s as a series of stabilization ponds used to treat wastewater residuals from the wastewater plants, the Hornsby Bend Beneficial Reuse Program has become a nationally recognized, EPA award-winning sludge-recycling facility. Dried sludge is received at the Hornsby Bend biosolids facility and combined with tree trimmings and yard waste, which are used as bulking agents, to convert the wastewater sludge into an EPA-certified soil conditioner and fertilizer called Dillo Dirt™. This popular product is donated to landscape public places and sold to commercial vendors.



Wastewater Rate Structure

Austin Water's wastewater rate structure includes a fixed monthly service charge of \$10.30 for all customer classes. Qualified low income residential customers enrolled in the City of Austin CAP receive discounted volumetric rates, as well as a waiver of the fixed monthly service charge. Residential customers have a one step inclining volumetric increase at 2,000 gallons and above, while all other classes have flat (uniform) volumetric rates. An industrial waste service surcharge is added to customers with higher sewage strengths.

Customers are assigned a wastewater average based on their average water consumption over three consecutive billing periods from mid-November through mid-March. A wastewater average represents the estimated amount of wastewater discharged into the sanitary sewer collection system. Wastewater bills are determined by each customer's actual water consumption for the month or by the customer's

wastewater winter average, whichever is lower, except for customers who have installed a wastewater measuring device such as a flow meter.

Austin Water used an average of 4,000 gallons of flow per month annualized for the residential customer class when calculating the bill impact for the nationwide survey.

Cost of Service Study

Austin Water conducted a Cost of Service (COS) rate study of its water, wastewater, and reclaimed water rates in FY 2016-17. The year-long process entailed a comprehensive review of the methodologies used to allocate costs and to update and improve the methods for determining fair and defensible rates of utility services. The rate study included extensive involvement from our retail and wholesale customer class committees and the public.

Background

Austin Water performed the last COS study of the water and wastewater rates in 2008. While the COS principles remain unchanged, Austin Water believed the methodologies used to determine equitable and defensible rates needed to be strengthened to ensure all customer classes paid for their cost of providing service.

In 2013, members of the wholesale customer class challenged the cost allocation and rate design methodology with the Public Utility Commission of Texas (PUCT). The PUCT ordered Austin Water to lower the water and wastewater rates in order to offset costs the commission deemed unfair and unreasonable to the petitioners. The PUCT also ruled that future changes to water and wastewater service rates would need to be submitted for review and approval prior to implementation.

Project Overview

AW collaborated with Raftelis Financial Consultants (RFC) to design and develop new water and wastewater rate models in accordance with the American Water Works Association industry standards. Austin Water hired NewGen Strategies & Solutions to act on behalf of the residential customer class, while several public and wholesale commission members were appointed to represent the multifamily, commercial, large volume and wholesale customer classes.

Several public COS rate study meetings were conducted that included members of both public and wholesale involvement committees. The committee members were tasked with examining the current methodology used by AW to determine the cost of providing services, discuss how various factors impact costs, and provide input to the project team and executive team committees.

Bill Comparison Methodology

The bill comparison methodology includes water consumption and sewer flows per month and calculates bills by customer class and meter size. Residential bill comparisons are based on a 5/8" meter, while the multifamily and commercial bill comparisons are based on a 1½" meter. The wastewater bill comparisons for all three customer classes are based on normal strength discharges. Both the water and wastewater bill



comparisons are based on the historical monthly consumption and flow amounts of the average Austin customer by class as depicted in the graphs.

Austin Water's rate structure for water includes peak and off-peak rates in the multifamily and commercial customer classes. For purposes of comparison, the monthly amounts included in this survey are annualized based on average historical usage trends of customers within the individual classes.

The bill comparison reviews retail water and wastewater bills for customers within Austin Water's service area. The surveyed cities were chosen based upon population size, geographic similarity, or relative location to the City of Austin. The City of Austin cannot guarantee the correctness of the information provided, nor can it be held responsible for errors or omissions. Figures are supplied by participating utilities and rate schedule calculations from web site postings. The comparison includes rates that are in effect for the majority of the 2017 calendar year.

**CITY OF AUSTIN, TEXAS
AUSTIN WATER UTILITY**

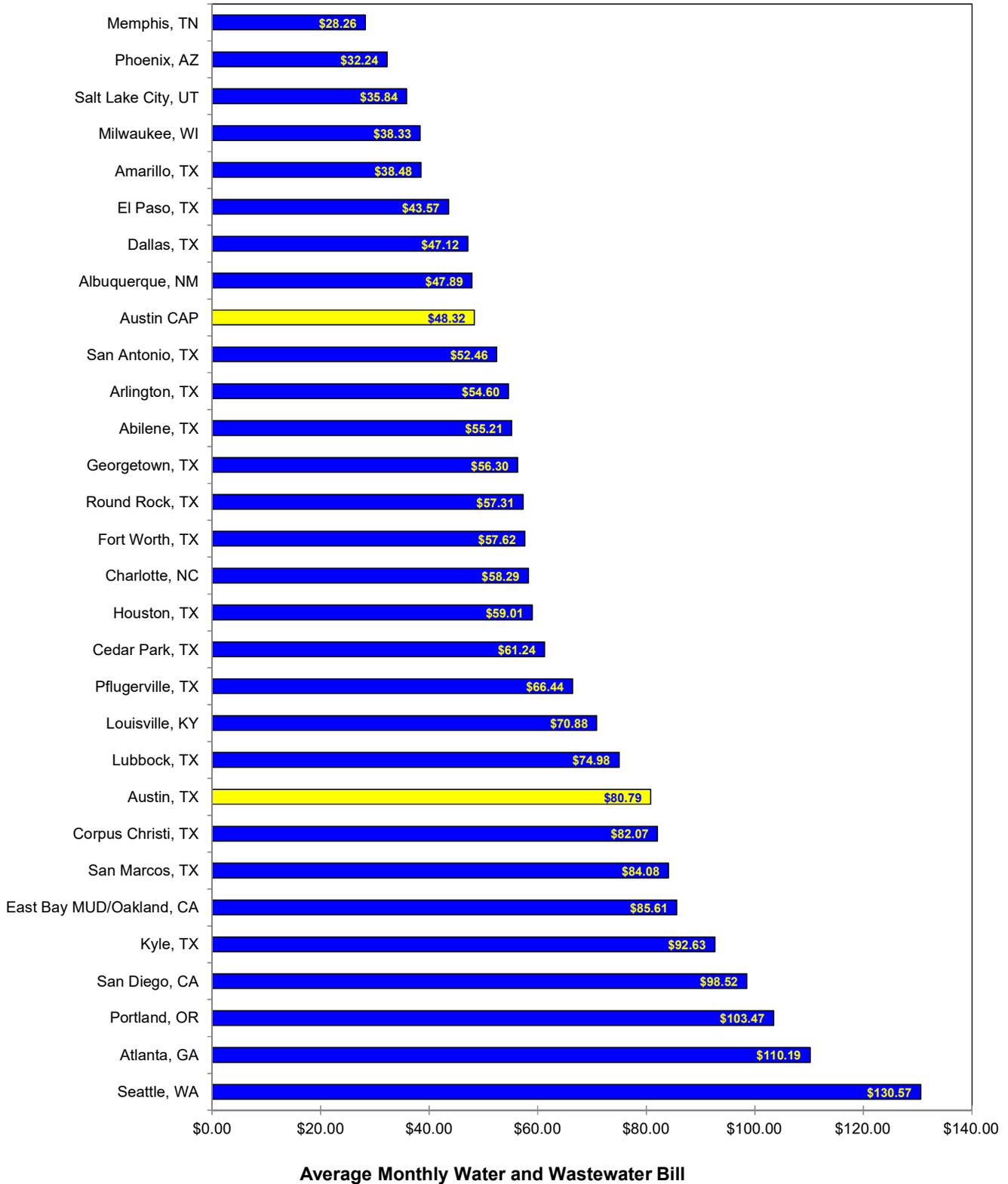
2018 National Water and Wastewater Survey

INDEX

<u>Description</u>	<u>Worksheet</u>
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Residential - Water Only	Graph 2
Multi-Family - Water Only	Graph 3
Commercial Class - Water Only	Graph 4
Residential - Wastewater Only	Graph 5
Multi-Family - Wastewater Only	Graph 6
Commercial Class - Wastewater Only	Graph 7
Combined Bill as a Percent of Median Household Income	Graph 8

*** Drawing conclusions from these comparisons should be done only after evaluating several community characteristics, such as geography, climate, service area, and the use of subsidies and grants.
A low or high ranking does not necessarily mean that a utility is more or less efficient, respectively.**

**AVERAGE MONTHLY BILL COMPARISON - COMBINED
RESIDENTIAL CLASS
Existing Rates - (5,800 Gallons Consumption and 4,000 Flows)**



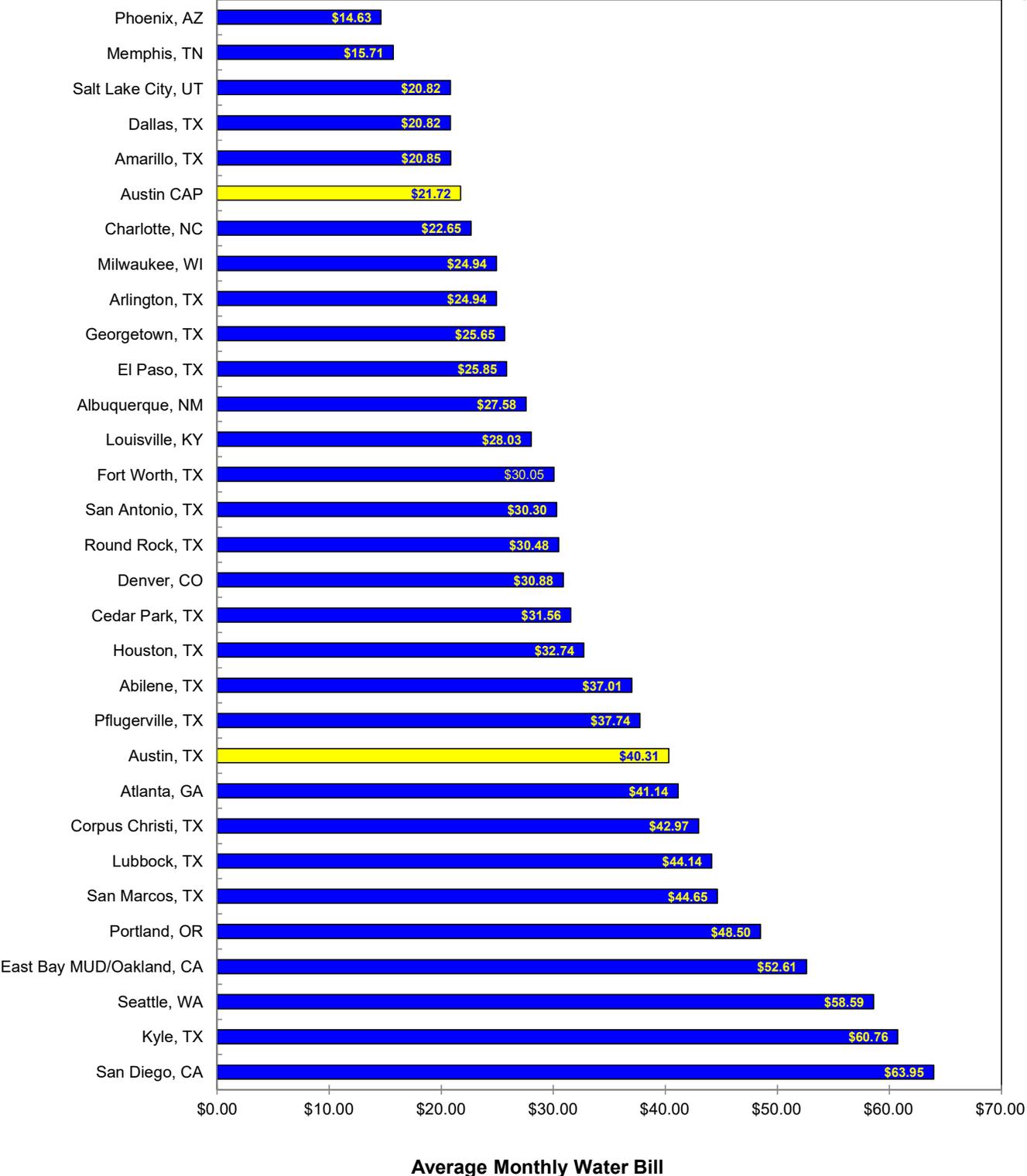
Graph 1

**AVERAGE MONTHLY BILL COMPARISON - WATER
RESIDENTIAL CLASS
Existing Rates - (Austin Average Water Consumption)**

Historical Monthly
Averages in Thousands

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5.1	4.4	4.4	5.3	6.2	6.1	6.6	7.6	8.3	6.1	4.9	4.6

Monthly
Annualized
Average 5,800
Gallons



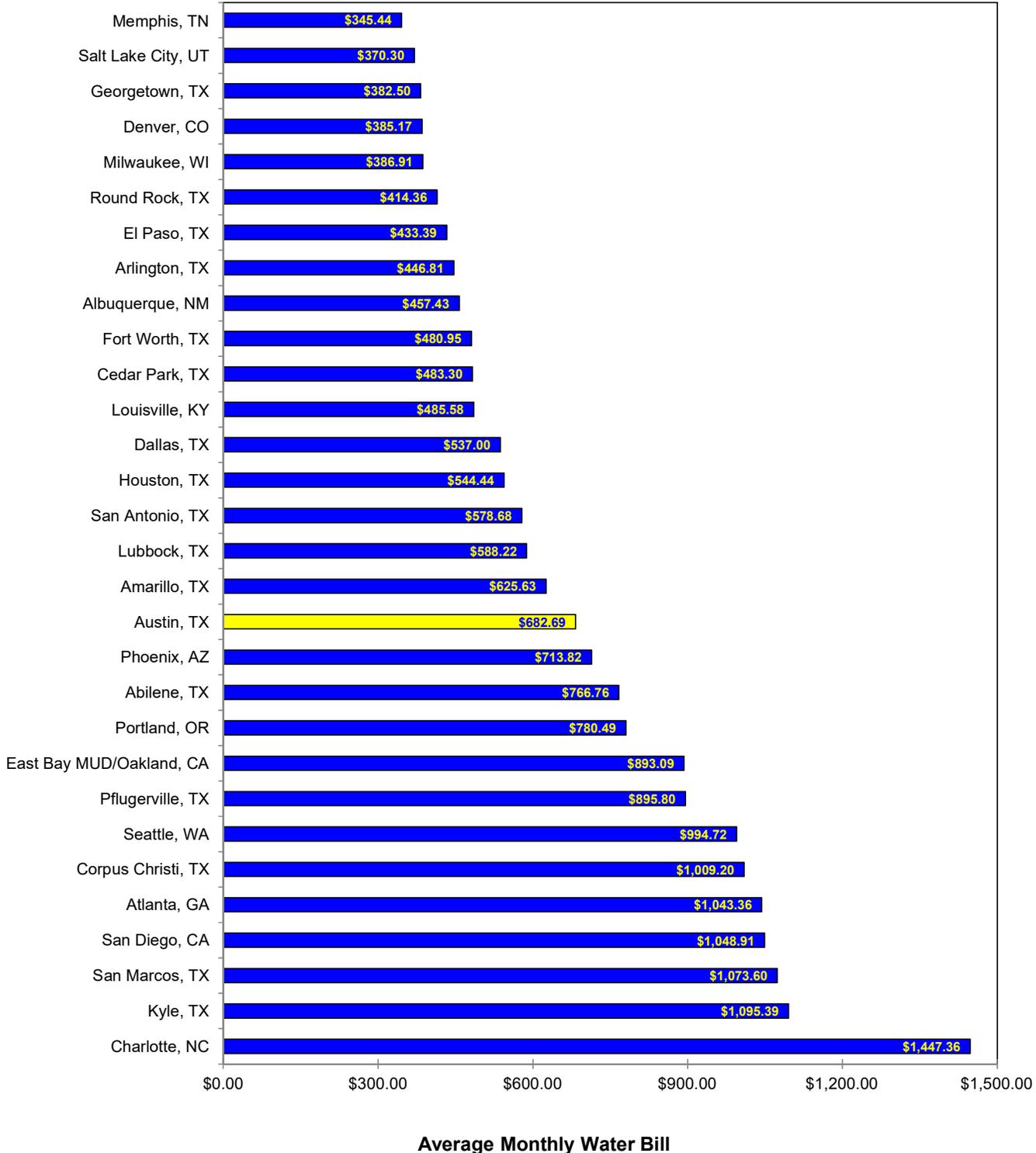
Graph 2

**AVERAGE MONTHLY BILL COMPARISON - WATER
MULTI-FAMILY CLASS
Existing Rates - (Austin Average Water Consumption)**

Monthly
Annualized
Average 127,500
Gallons

Historical Monthly
Averages in Thousands

JAN 121 FEB 108 MAR 114 APR 115 MAY 124 JUN 133 JUL 137 AUG 141 SEP 151 OCT 137 NOV 127 DEC 121



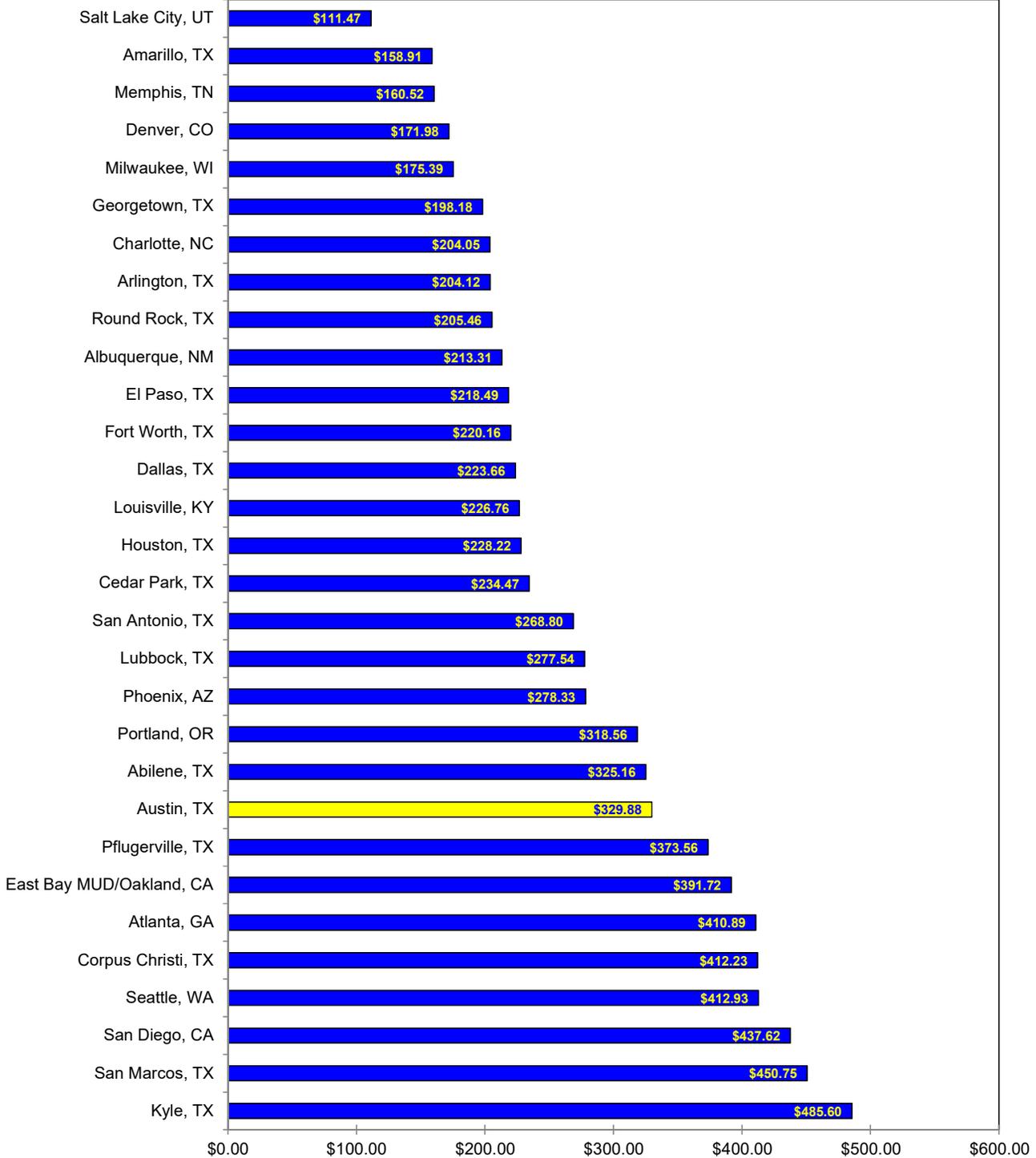
Graph 3

**AVERAGE MONTHLY BILL COMPARISON - WATER
COMMERCIAL CLASS
Existing Rates - (Austin Average Water Consumption)**

Historical Monthly
Averages in Thousands

JAN 42 FEB 37 MAR 40 APR 44 MAY 48 JUN 54 JUL 59 AUG 64 SEP 69 OCT 56 NOV 51 DEC 44

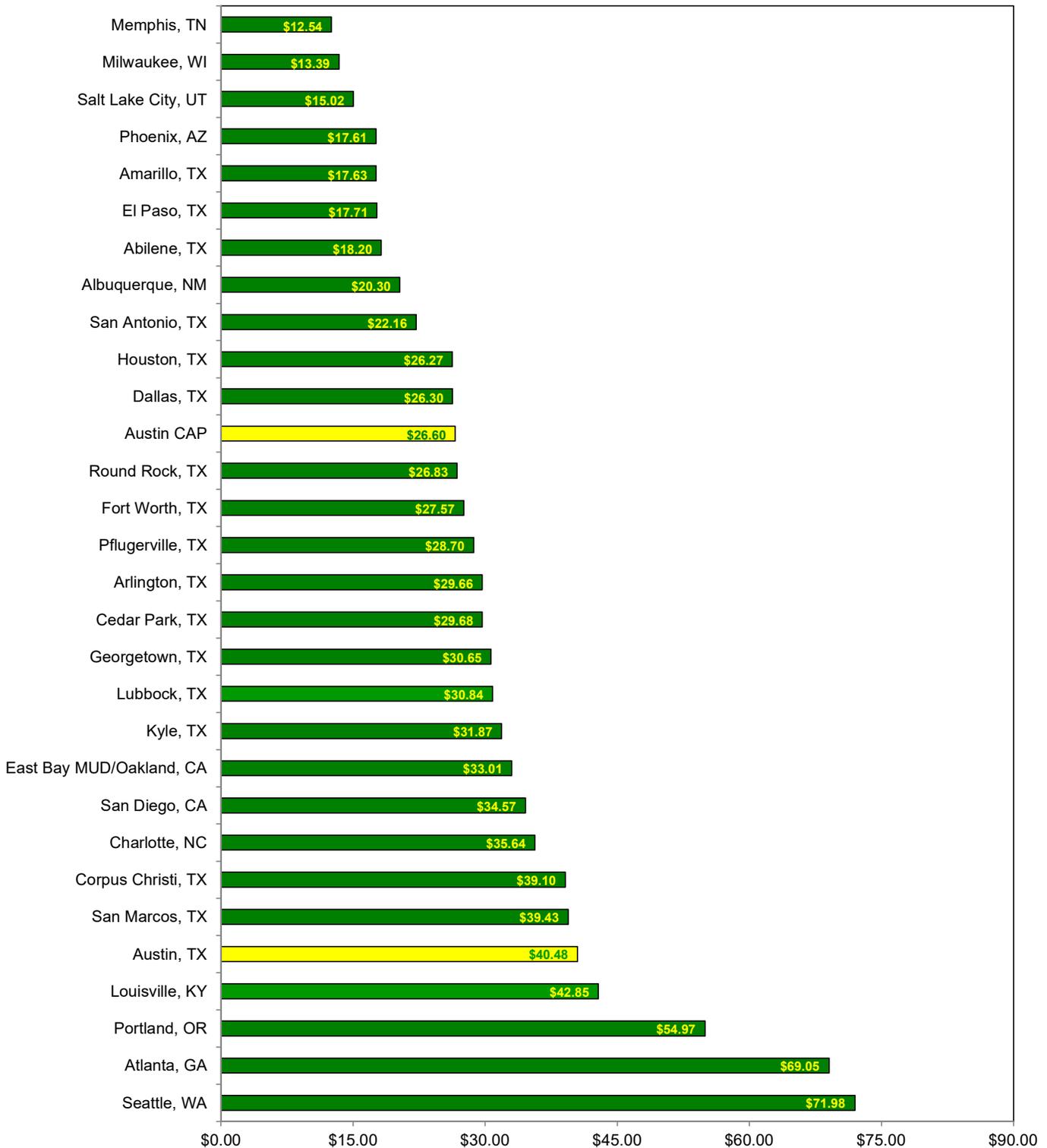
Monthly
Annualized
Average 51,000
Gallons



Average Monthly Water Bill

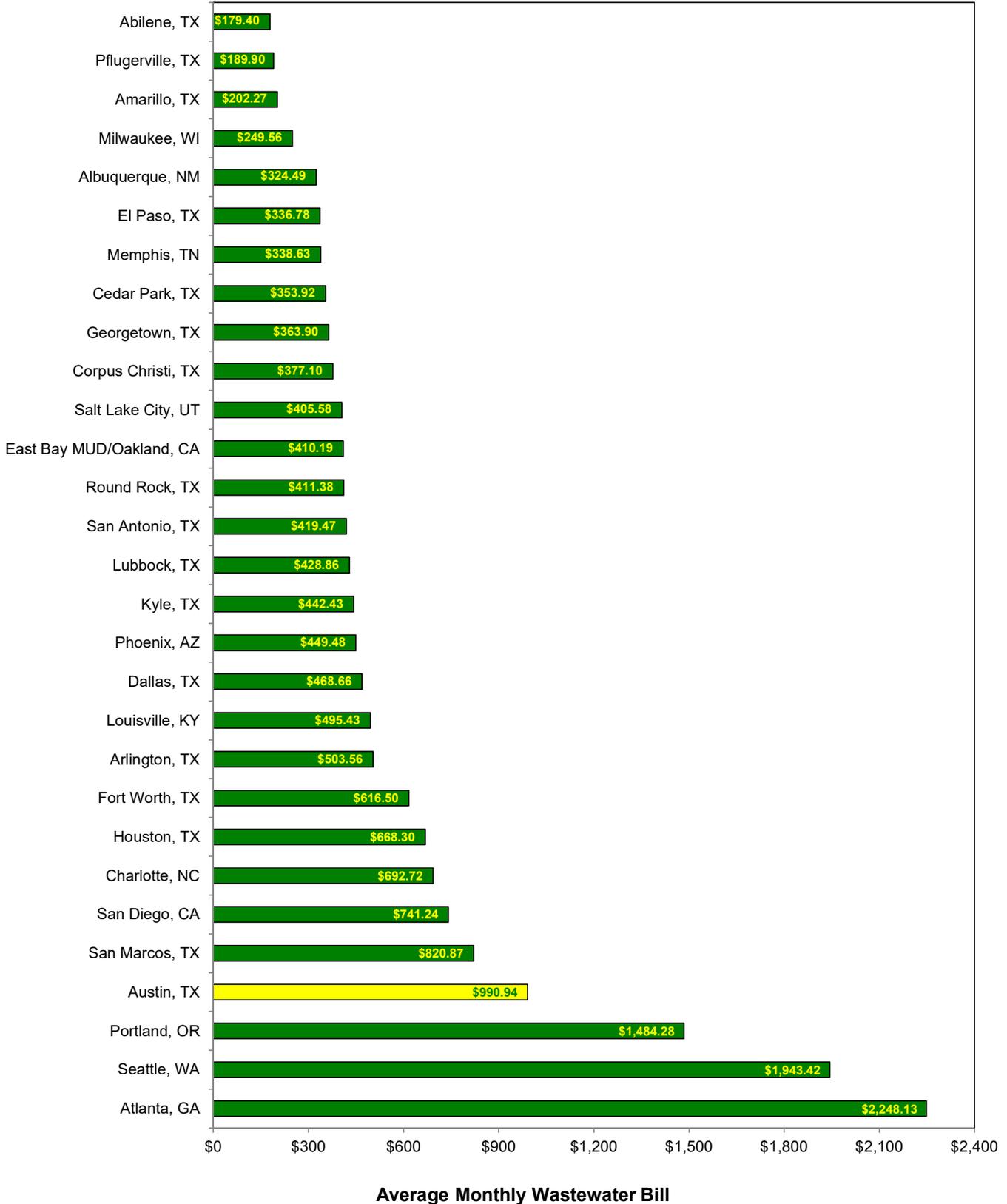
Graph 4

**AVERAGE MONTHLY BILL COMPARISON - WASTEWATER
RESIDENTIAL CLASS
Existing Rates - (Austin Average Wastewater Flow)**



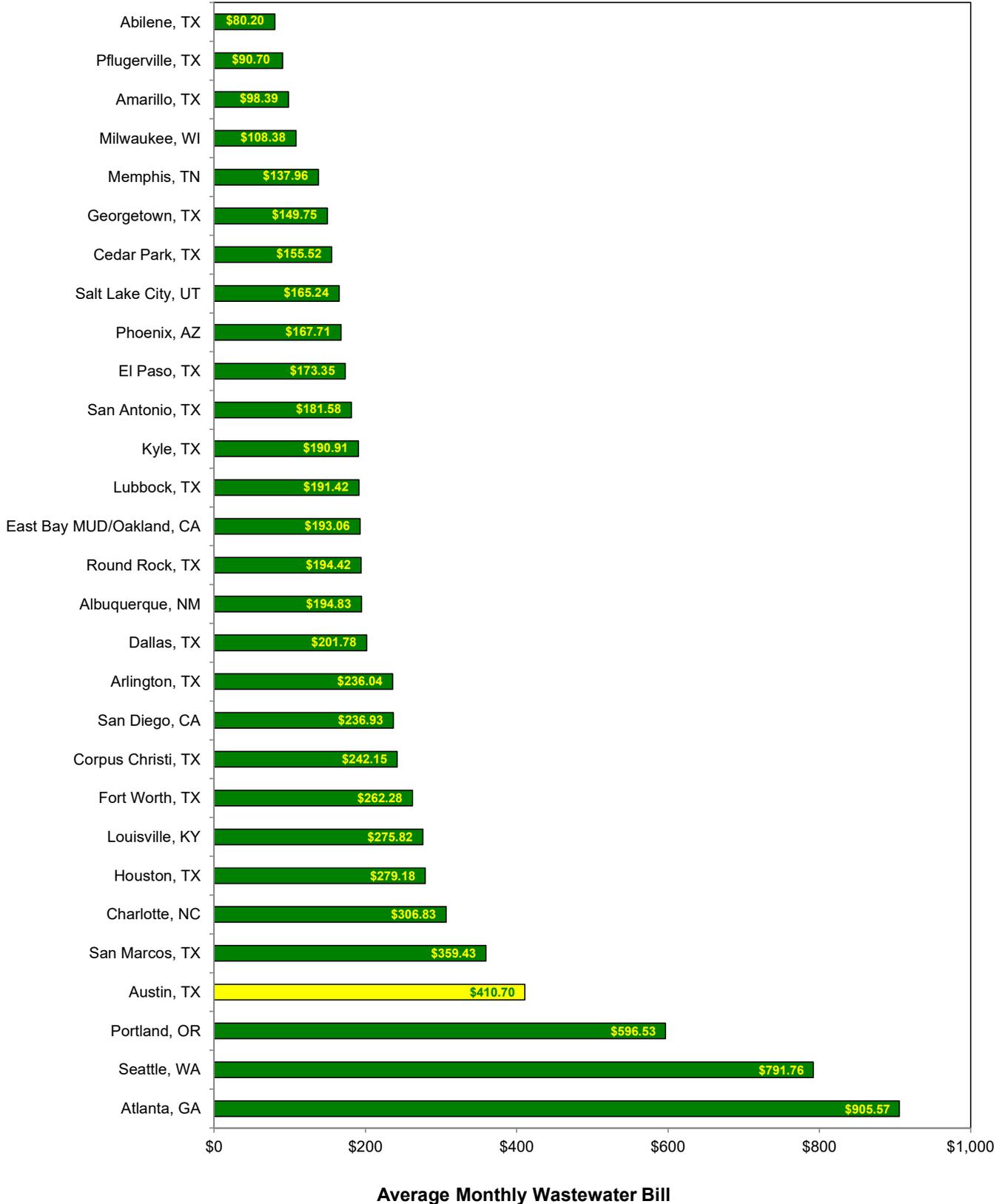
Average Monthly Wastewater Bill

**AVERAGE MONTHLY BILL COMPARISON - WASTEWATER
MULTI-FAMILY CLASS
Existing Rates - (Austin Average Wastewater Flow)**



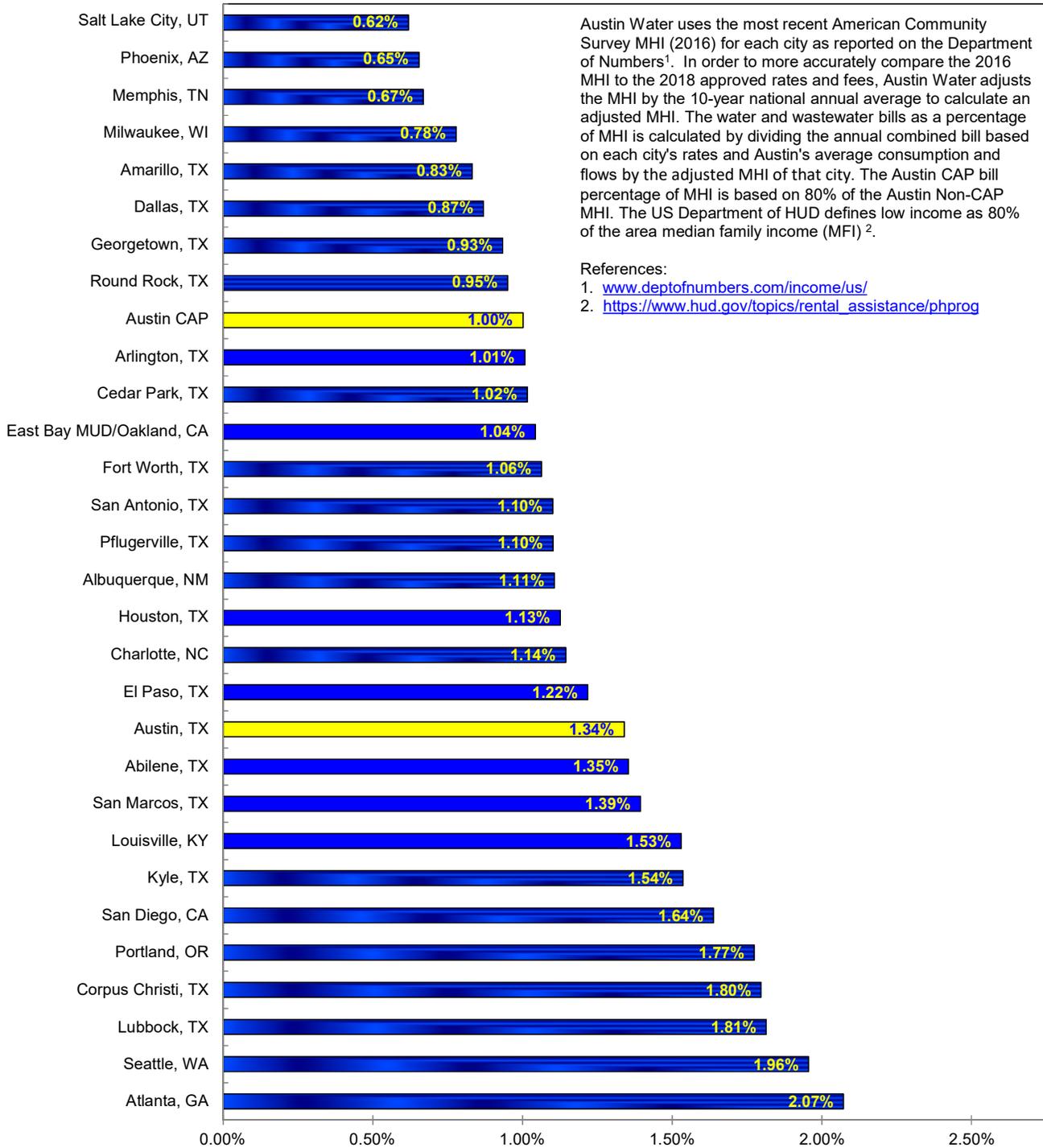
Graph 6

**AVERAGE MONTHLY BILL COMPARISON - WASTEWATER
COMMERCIAL CLASS
Existing Rates - (Austin Average Wastewater Flow)**



Graph 7

**Water and Wastewater Bill as a Percent of Median Household Income
RESIDENTIAL CLASS
(Austin Average Consumption and Flows)**



Austin Water uses the most recent American Community Survey MHI (2016) for each city as reported on the Department of Numbers¹. In order to more accurately compare the 2016 MHI to the 2018 approved rates and fees, Austin Water adjusts the MHI by the 10-year national annual average to calculate an adjusted MHI. The water and wastewater bills as a percentage of MHI is calculated by dividing the annual combined bill based on each city's rates and Austin's average consumption and flows by the adjusted MHI of that city. The Austin CAP bill percentage of MHI is based on 80% of the Austin Non-CAP MHI. The US Department of HUD defines low income as 80% of the area median family income (MFI)².

- References:
- www.deptofnumbers.com/income/us/
 - https://www.hud.gov/topics/rental_assistance/phprog

Average Monthly Water and Wastewater Bill

APPENDIX

Attachment No. 6

**Make Water Affordable Again?
American Water Works Association, Journal
June 2018**

**Wendi Wilkes
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Wilkes

Make Water Affordable Again?

Communities are more frequently confronting water affordability issues at the utility and household levels, with multiple stakeholders working to balance affordable rates with the costs of service. For example, the City of Philadelphia, Pa., passed a progressive affordability program in 2017 that used household income as the basis for customer water rates (Nadolny 2017). Other recent municipal efforts in the United States include the work of the Baltimore, Md., city council to craft a water affordability package (expected this year), while in Chicago, Ill., aldermen have discussed ways to insulate low-income residents from water rate increases (Spielman 2017). In an example from Texas, concern over affordability led the City of Austin to explore rate reductions in 2018 for all classes of retail customers (Devenyns 2017). Given the widespread attention water affordability has recently received and the variety of approaches communities can consider, it's not surprising that this local issue has caught the attention of some members of the US Congress.

2017 NAPA AFFORDABILITY FRAMEWORK

In the 2016 omnibus spending deal, Congress instructed the National Academy of Public Administration (NAPA) to study US Environmental Protection Agency (USEPA) water affordability guidance and provide a definition and framework for affordability of clean water for a community. NAPA assembled a panel of five academy fellows who directed the work of a study team to conduct a comprehensive literature review, survey, interviews, and a roundtable with stakeholders. The panel developed 21 recommendations for USEPA, summarized in its report, *Developing a New Framework for Community Affordability of Clean Water Services* (2017 NAPA Affordability Framework; NAPA 2017).

Although the congressional directive and many of USEPA's existing policies and guidance focus on affordability of controlling combined sewer overflows (CSOs) and application under the Clean Water Act (CWA), the 2017 NAPA Affordability Framework panel widened the scope to look at affordability beyond the CWA. After all, the same ratepayer feels the burden alike for clean water, stormwater, and drinking water needs.

Many of the report's recommendations are consistent with AWWA's comments on and critiques of USEPA's policies regarding affordability. The study focuses on how USEPA calculates the affordability of projects required to bring water systems into compliance with the CWA for CSOs. Ultimately, the report finds that median household income is not an effective indicator of community affordability. In addition, the metrics used by USEPA to address affordability in either the National Pollutant Discharge Elimination System permit process or an enforcement process (such as consent decrees) originating from the 1994 CSO Policy (USEPA 1994), and the subsequent 1997 *Combined Sewer Overflows—Guidance for Financial Capability Assessment and Schedule Development* (1997 FCA Guidance), need to be revised and improved.

THE FINANCIAL CAPABILITY METRIC

The 1997 FCA Guidance, used by USEPA to determine a community's ability to pay for a project to reduce pollution of waterways by CSOs, relies on a residential indicator (RI)—based on the ratio of total annual wastewater and CSO control costs to the community's median household income (MHI)—and a financial capability indicator—based on metrics that include bond rating, debt load, unemployment rates, MHI, and property tax revenues and collection rates. The RI uses a level of 2% of MHI to determine affordability for wastewater; in

other words, a project is affordable if it produces an average sewer bill less than 2% of MHI. AWWA and others have long criticized using this metric to gauge affordability because using MHI as a metric diminishes the impact of high water bills on the lowest-income customers (Teodoro 2018). Additionally, the RI only includes wastewater and CSO costs and does not evaluate all water costs, including drinking water, a metric that would reflect the full cost of water service to the customer. No explanation is provided in the 1997 FCA Guidance or in supporting materials for the choice of standards for the RI—namely, that costs exceeding 2% of household income constitute a high impact, and costs of less than 1% of household income constitute a low impact. In fact, the origination of this threshold is quite obscure.

The use of MHI as an economic indicator appears to have originated with the Farm Home Loan program in 1972 (NACWA 2005). This approach then spread to other programs, appearing in USEPA documents as early as 1984 (USEPA 1984). A 1998 USEPA document on variance technology for drinking water systems indicates the 2.5% threshold for drinking water affordability used by USEPA was derived in part from comparing Consumer Expenditure Survey data gathered by the Bureau of Labor Statistics; alcohol and tobacco, telephone, and energy and fuel expenditures are the reference data used in developing the affordability threshold (USEPA 1998).

In any case, the 2% threshold for wastewater and the 2.5% threshold for drinking water do not appear to be derived from an economic analysis, and further use of MHI as the standard metric for affordability deserves further study. Incorporating these recommendations from the report, and improving USEPA's water affordability guidelines so that a community's ability to pay for clean water projects required for federal compliance is more accurately captured, will ultimately benefit customers and the community by extending CSO enforcement deadlines and moving USEPA toward a more holistic view of affordability.

CONSUMER ASSISTANCE PROGRAMS

Another recommendation of the 2017 NAPA Affordability Framework urged USEPA to “work with local and state governments to eliminate barriers restricting utilities’ ability to develop more efficient and equitable water rate structures, including specific Consumer Assistance Plans (CAPs) for financially distressed low-income ratepayers” (NAPA 2017, 149). In 2017, the University of North Carolina Environmental Finance Center authored a report, funded in part by AWWA, exploring the legal framework, state policies, and barriers to rate-funded CAPs (UNC 2017).

Perhaps the most striking finding in this report is that only a few states have clear laws that specifically

address the ability of water systems to establish CAPs from rate revenues. This is in stark contrast to state regulations addressing energy bills and affordability for low-income customers that exist in nearly every state (AWWA 2017). Although the lack of clear legal precedent in the water sector allows for ingenuity and innovative approaches, it also gives no assurance to a utility on whether a rate-funded CAP is permissible or prohibited. If states follow the recommendation put forth by the 2017 NAPA Affordability Framework, there could be an increase in states adopting more explicit language regarding how a water utility may legally address affordability and assist low-income customers in its service area.

ON CAPITOL HILL AND IN THE NATIONAL DIALOGUE

More recent activity on Capitol Hill could result in new legislation concerning water affordability. With an infrastructure package next in line on the congressional to-do list, we may see an increase in discussion and action around affordable water service and CAPs. In January 2018, the Senate Environment and Public Works Committee held a hearing on water infrastructure needs and challenges, marking the beginning of Senate focus on water infrastructure in the current session of Congress. Although affordability was not a main topic, an infrastructure bill would be a reasonable and compelling place to embed legislation on affordability issues for either water systems or households.

With an infrastructure package next in line on the congressional to-do list, we may see an increase in discussion and action around affordable water service and CAPs.

While members of the Trump Administration have talked more about process and permit streamlining, this cabinet has also promised to deliver a trillion-dollar infrastructure investment. The House Committee on Energy and Commerce has passed H.R. 3387, the Drinking Water System Improvement Act, a bill that would reauthorize the Drinking Water State Revolving Loan fund program and make some other changes to drinking water policy. This is intended to be the drinking water component of comprehensive infrastructure legislation in the House; however, it does not focus on affordability. Wastewater is under the jurisdiction of the House Committee on Transportation and Infrastructure,

and this committee is not as far along as the Energy and Commerce group in producing its infrastructure legislation (note that in the Senate, Environment and Public Works has jurisdiction over both drinking water and wastewater). Given these variables and the current political climate, it's possible any meaningful legislation on water affordability will get lost in the chaos.

Although water service affordability is inherently a local challenge, the contribution of federal mandates to increasing water service costs and the national need for more investment in water infrastructure has set the stage for congressional action. In January 2017, the Problem Solvers Caucus, a bipartisan group of lawmakers, released a report on infrastructure policy solutions that recommends Congress "examine the growing affordability strain on ratepayers and its impact on water infrastructure maintenance and repair" (PSC 2017). The report also suggests that Congress develop a demonstration program to help states and cities address water affordability for ratepayers.

Along the same lines, draft legislation making its way around Capitol Hill proposes the creation of a new national grant program to help 20 water and wastewater systems address unaffordable water bills through CAPs. The cost of a grant program like this would be very high in comparison with the number of people it could ultimately serve, which will likely make such a program a tough sell for many members of Congress. By contrast, it's surprising that enormous federal programs such as the Low Income Home Energy Assistance Program and Supplemental Nutrition Assistance Program exist to address affordability issues in the realms of energy bills and groceries, respectively, but no equivalent federal program is in place to address water and wastewater bills for low-income Americans. Though a national grant pilot program would undoubtedly have a significant effect for some systems over the next decade, it prompts the question, what about the other communities also facing affordability challenges now?

A new and upcoming symposium hosted by AWWA and the Water Environment Federation will attempt to address these issues head-on. The first annual Transformative Issues Symposium (www.awwa.org/affordability), scheduled for Aug. 6–7 in Washington, D.C., will focus on affordability, with topics such as utility rate setting, infrastructure financing, and legal and regulatory barriers around CAPs. The symposium is a chance for leaders in the water sector to work together on an important issue, identify new concerns, and collaborate to develop solutions. As water professionals come together at events like this to address pervasive affordability issues, their innovations and insights provide the guidance communities need to make water ultimately affordable for all.

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APPENDIX

Attachment No. 7

**Measuring Household Affordability for Water and Sewer Utilities
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January 2018**

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Measuring Household Affordability for Water and Sewer Utilities

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Rising costs and recent high-profile crises have brought renewed and increasing attention to the affordability of water and sewer service. Meaningful, accurate assessment of affordability is critical as utility leaders seek to serve low-income customers while also raising the revenue necessary to maintain and advance public health and conservation. Unfortunately, the predominant conventional method of measuring household affordability is fundamentally flawed and often misleading. This article

advances a more accurate and meaningful method for measuring the affordability of water and sewer service for low-income households. The proposed method accounts for essential household water needs, income disparities, and core nonwater/sewer costs. After detailing the method, the new approach is used to measure water and sewer service affordability in the 25 largest US cities. The article concludes with a discussion of the new method's limits and general guidelines for its use in policymaking and rate design.

Keywords: *affordability, finance, measurement, rates*

This article advances a new method for measuring the affordability of water and sewer service for low-income households. Rising costs and recent high-profile crises have brought renewed and increasing attention to the affordability of water and sewer service for utilities that rely upon rate revenue to meet operating and capital needs. Consequently, communities across the United States and elsewhere are under increasing pressure to ensure that the most economically vulnerable can afford to pay for these essential services in an era of rising costs. Meaningful, accurate assessment of affordability is more critical than ever as utility leaders seek to serve low-income customers while raising the revenue necessary to maintain and advance public health and conservation (LaFrance 2017).

As with any organizational goal, getting affordability right requires measuring affordability accurately; unfortunately, the predominant method of measuring household water and sewer affordability is fundamentally flawed. The conventional approach measures affordability as a community's average cost of water and sewer service as a percentage of that community's median household income (%MHI), with values <2.0 or 2.5%—4.0 or 4.5% combined—deemed “affordable” (Mack & Wrase 2017). Originally intended as a means of gauging a community's overall financial capability for purposes of negotiating regulatory compliance, this standard has been widely misapplied to household affordability. As a result, evaluations of household water and sewer utility affordability are inaccurate at best and misleading at worst.

This article offers a more meaningful and accurate method for measuring the affordability of water and

sewer service at the household level. Unlike the conventional approach, the proposed affordability ratio (AR) accounts for essential household water needs and core nonwater/sewer costs. Further, because the main concern for affordability in the United States and other developed countries is for low-income households, the proposed method assesses affordability at the 20th income percentile (AR₂₀), rather than at median income. Basic household water and sewer cost is expressed in terms of hours of labor at minimum wage (HM) and offered as a useful complementary affordability measure. Together, these two metrics offer a more defensible and practically useful way of assessing utility affordability for purposes of budgeting, planning, rate-setting, and policy design.

This article begins by summarizing the current conventional %MHI approach to measuring affordability and the ways in which it fails. The proposed new and improved method is then presented, along with a discussion of its advantages over the conventional approach. As an illustration, the new method is used to measure water and sewer affordability in the 25 most populous US cities. The article concludes with a discussion of the new method's applicability, limitations, and general guidelines for use in budgeting and rate design. Significant portions of the current article draw on Davis and Teodoro (2014), which first introduced the AR method.

THE CONVENTIONAL APPROACH AND WHY IT IS WRONG

As noted previously, the most widely applied method of measuring water and sewer affordability in the United States is to calculate the average residential water and sewer bill for

a given utility as a percentage of the community's MHI. Usually, this percentage is calculated for an entire utility, but sometimes it is calculated for a subset of customers, such as a neighborhood or a census tract. Typically, this percentage is compared with a set affordability standard, most often 2.0% or more, recently, 2.5%. A simple binary declaration follows this standard: if a utility's average bill as %MHI is less than this standard, then it is deemed "affordable"; if it is greater, then it is "unaffordable." Sometimes these %MHI standards are applied separately to water and sewer rates; at other times, they are combined water plus sewer costs. Often used but rarely considered carefully, the 2.0 or 2.5%MHI (4.0 or 4.5%MHI combined) standard has become the default basis for analyzing water and sewer affordability in recent published research (Mack & Wrase 2017, Janzen et al. 2016), with no other rationale than that it is convenient and conventional. Utility rate analysts typically follow suit; the University of North Carolina Environmental Finance Center's Water and Wastewater Rates Dashboard uses the %MHI method to guide rate design, for example (<https://efc.sog.unc.edu/reslib/item/north-carolina-water-and-wastewater-rates-dashboard>).

Despite its widespread use, the %MHI approach is seriously flawed. The main trouble with using it as a measure of affordability is that it does not measure affordability—at least not at the household level, in the way that most interested observers typically think of affordability. The %MHI method and accompanying 2.0% standard as developed by the US Environmental Protection Agency (USEPA) were intended as a gauge of a community's financial capability for purposes of negotiating regulatory compliance by its utilities. The idea of %MHI as a measure of financial capability can be traced to the USEPA's *Financial Capability Guidebook* (USEPA 1984). Identifying specific %MHI thresholds for determining financial capability appears to emerge from the agency's 1995 guidelines on Water Quality Standards (USEPA 1995) and Combined Sewer Overflow compliance schedule (USEPA 1997). For purposes of assessing financial capability, %MHI values for water and sewer would be calculated separately, with the sum of the two held up against the standard. For example, a 2.0%MHI standard for water and 2.0%MHI standard for sewer implies a 4.0%MHI combined standard. None of these USEPA documents offers a theoretical rationale for the 1.0, 2.0, or 2.5%MHI standards.

It is not clear when or how analysts began to conflate these utility-level financial capability metrics with household-level affordability, but as noted previously, %MHI is now widely used as a household affordability metric. Unfortunately, as a method of measuring household affordability, the %MHI method is flawed in at least four ways.

Average versus essential water use. Using average residential demand as a basis for affordability analysis inflates the cost of water and sewer service for purposes of affordability analysis. In nearly all US utilities of significant size,

average residential water consumption is considerably higher than its median—that is, relatively conservative customers greatly outnumber high-volume customers. Consequently, in most utilities, a minority of high-volume customers drive up the average demand that the conventional method uses as the basis for affordability analysis. Further, most American water utilities exhibit significantly greater demand during summers because of residential outdoor irrigation, indicating that much of the "average" water bill is for usage that is not serving basic health needs. Public policy discussions of water and sewer affordability seldom are concerned with the cost of maintaining large lawns, swimming pools, or other discretionary outdoor use. Rather, affordability is typically thought of as the ability of customers to pay for water and sewer services that are adequate to meet their basic needs for drinking, cooking, health, and sanitation. For most US utilities, then, evaluating affordability as a function of average consumption implies an unduly high demand.

Median versus low income. Perhaps the most frequent criticism of the %MHI standard is that its focus on median income misses the real subject of affordability concerns: poor households (Stratus Consulting 2013, Baird 2010, Rubin 2001). The median-income household is unlikely to face serious water and sewer affordability problems in any but the smallest or most desperately poor communities. For low-income households, however, water and sewer services may force important economic tradeoffs. Measuring affordability as a function of an entire community's MHI obscures the effects of rate-setting on low-income customers, for whom utility leaders presumably have the greatest affordability concerns. Certainly the tenor of public policy debates surrounding utility affordability suggests that low-income residential customers are the focus of alarm. As income stratification in a community increases, the degree to which %MHI masks potential affordability problems increases.

Essential costs of living. Water and sewer services are vital, but are not the only vital goods and services customers must purchase. Housing, food, health care, home energy, and other essential goods and services also affect water and sewer affordability to the extent that they constrain households' financial flexibility. These nonwater/sewer costs vary widely across utilities. Water and sewer bills may be low as a percentage of income, but much higher as a percentage of disposable income if the costs of housing or health care are high, for example. In such cases, water and sewer bills that are nominally low or are a small percentage of MHI may force serious sacrifices for low-income customers. The conventional approach to affordability measurement is insensitive to these differences in costs of living.

An arbitrary, binary standard. Whether the affordability standard is set at 1.0, 2.0, 2.5, or any other %MHI, the standard represents a value of water and sewer service that is rarely (if ever) rooted in any philosophical reasoning

or as a result of a deliberative process. Instead, analysts simply cite precedent and invoke the standard. Whatever its origins, the 2.0 (or 2.5) %MHI affordability threshold has evolved into a “golden number” (Socolow 1976), now held up as a definitive measure of household-level affordability, apparently for no other reason than its familiarity and convenience.

The simple binary nature—either affordable or unaffordable—of the %MHI standard is also problematic. The affordability of anything is rarely a strictly yes/no phenomenon—in microeconomics, things are more or less affordable relative to the costs of other things. Although informal rules of thumb can be useful, the %MHI standard has become a crutch that causes simplistic and misleading analyses. For example, simplistic application of the %MHI standard to census tracts led one recent study to report that “water rates are currently unaffordable for an estimated 11.9% of households” (Mack & Wrase 2017), with no attention to the validity of %MHI standard or the distribution of water consumption within the census tracts in which water was declared unaffordable. By the same token, leaders of a utility that satisfies the %MHI threshold can use the standard as an excuse not to address affordability, even if many of its customers struggle to pay their bills.

A BETTER WAY

This article offers a method for measuring water and sewer utility affordability that proceeds from an understanding of affordability as the ability of individual customers to pay for water and sewer services to meet their basic needs while maintaining the ability to pay for other essential costs (Davis & Teodoro 2014). This definition is similar to what the USEPA’s National Drinking Water Advisory Council called “household relative affordability” (NDWAC 2003). The method aims to retain the intuitive appeal of the conventional approach while remedying its shortcomings. Specifically, the proposed method: (1) measures household-level affordability (rather than the entire utility’s financial capability); (2) provides for basic water needs (rather than average consumption); (3) focuses on low-income households (not average- or median-income customers); and (4) accounts for essential costs other than water and sewer. The proposed method involves two complementary metrics: the AR and basic costs expressed as HM.

The AR. Household-level affordability (sometimes called micro-affordability) can be measured as the percentage or ratio of basic water and sewer costs to disposable household income for low-income customers. This measure may be calculated for an individual customer or aggregated statistically for any defined group of customers. For a given customer c , the AR (AR_c) is

$$AR_c = \frac{p_c(W + S)}{I_c - E_c} \quad (1)$$

where I is household income, E is essential household expenses (other than water and sewer services), p is the number of persons in the household, and W and S are the per capita cost of essential water and sewer services, respectively. The relevant time frame for calculating AR depends on the billing cycle used by the utility (e.g., monthly, bimonthly, quarterly).

The numerator in Eq 1 is the price of basic service to customer c , which varies according to the water volume considered necessary to maintain health, the utility’s rates, and the number of people in the household. The denominator is c ’s disposable income, which depends on the customer’s income and the cost of essential nonwater/sewer household expenses. The definitions of basic water needs and essential household expenses may vary from one utility to another, depending on local values and conditions. The resulting AR_c reflects the economic tradeoffs that customer c faces because of the costs of basic water and sewer service.

AR can be calculated for any customer, group of customers, or hypothetical customer. An assessment of AR_{20} provides a meaningful look at affordability for low-income customers. This focus on the 20th percentile household aligns the analysis of water and sewer affordability with mainstream assessments of welfare economics, which typically identify the 20th percentile as the lower boundary of the middle class. At this income level, “working poor” households have very limited financial resources, but may not qualify for income assistance programs. Public assistance programs vary considerably across the United States and across the world, and the absolute income level at the 20th percentile may qualify for significant assistance in some places. Still, the 20th percentile standard is a useful benchmark level for assessing the economic conditions of lower-middle-class and working-poor households. Analysts might choose to focus on a different income percentile when assessing affordability depending on the economic conditions or distribution of incomes in a particular community.

The ease and precision with which the AR can be calculated depend on the availability of household-level customer data. Calculating the numerator is straightforward, requiring only information about the utility’s rates (or proposed rate). Ideally, the AR’s denominator would be calculated using a comprehensive household-level consumer survey of the utility’s customer base. Because such data are unlikely to be readily available, in most cases analysis will depend on estimates of household income and expenditures. Those estimates can draw from a variety of sources; the analysis presented in this article uses regression-based estimates, but a simpler approach could be to use more readily available data on local housing, food, medical, home energy, and tax costs for a given community.

Basic service costs as HM. A complementary way to measure affordability is to calculate the HM that would be necessary to pay for basic water and sewer service. As with the AR, the HM may be calculated for an individual

customer or aggregated statistically for any defined group of customers. For a given customer c , basic service costs as HM (HM_c) is

$$HM_c = \frac{p_c(W + S)}{A} \quad (2)$$

where p is the number of persons in the household; W and S are the per capita cost of essential water and sewer services, respectively; and A is the minimum wage in c 's labor market. HM represents the cost of basic water and sewer service for low-income households, many of which work at or near minimum wage. HM is not sensitive to other essential costs as AR is, but it is intuitively appealing because minimum wage is a familiar economic touchstone.

Analytical assumptions. The AR and HM methods are generally applicable metrics flexible enough to accommodate specific conditions that apply in any utility. The definitions of basic service and (nonwater/sewer) essential expenses may vary depending on local community values, and the analyst should adjust assumptions as necessary. Basic service is a moving target because consumption patterns vary across utilities and are broadly trending downward in the United States (Rockaway et al. 2011). For purposes of this analysis and as a guideline for affordability analysis in the United States, basic service is defined as 50 gpcd. This standard is a typical assumed minimal residential wastewater flow for purposes of sewer system design (Bowne et al. 1994) and is meant to reflect indoor, nondiscretionary water use to maintain health in a contemporary US home. In a similar vein, the Texas Water Development Board (2004) recommended 50 gpcd as its standard for indoor water use in crafting a water conservation plan. Significantly less than average consumption of 91 gpcd (DeOreo et al. 2016) but greater than the 35.6 gpcd standard that Chenoweth (2008) identifies as the “minimum water requirement for social and economic development,” the 50 gpcd assumption represents a reasonable, conservative level of basic service for purposes of evaluating affordability across large numbers of utilities. Values of AR can be calculated for any household size, but a four-person household is assumed for this analysis. This is significantly greater than the average household size in the United States, which is 2.64 people (ACS 2015). As such, an assumed four-person household yields a conservative measure of affordability.

Essential household expenses in the present analysis include the costs of taxes, housing, food, medicine, health care, and home energy. These categories are considered essential because they are either inevitable (taxes) or at least as important as water for maintaining health. Any of these elements may be adjusted to reflect local conditions and values. For example, if the analyst believes that 50 gpcd is too high or too low a standard for basic service, then the AR_{20} formula can be adjusted accordingly. Similarly, essential household costs may be expanded to include other expenses (e.g., child care, transportation, telephone service) as appropriate according to local

preferences and conditions. The definition and measurement of essential costs should be based on the needs of low-income households locally. Local organizations that provide assistance to low-income households can provide useful information about these costs.

AFFORDABILITY IN MAJOR US CITIES

Water and sewer utility affordability in the 25 most populous US cities are analyzed here with the new affordability measurement as an empirical demonstration of the method and to provide a descriptive profile of affordability in the country's largest cities. Capital costs, operational expenses, rate structures, demographics, and economic conditions change frequently within and across utilities; therefore, the following information should be considered a snapshot of affordability in early 2017.

Data. To calculate basic service costs, water and sewer rates were gathered from utility websites during spring 2017. Because rate structures vary considerably across utilities in ways that affect the prices that individual customers pay, to maintain comparability and capture affordability, basic service costs were calculated assuming a single-family residential customer with a $\frac{5}{8}$ in. meter connection, billed monthly. For utilities that bill bimonthly or quarterly, volumes and charges were converted to monthly to maintain comparability. A four-person household and 50 gpcd were assumed. In cases in which rates vary seasonally or across geographic zones, the highest seasonal and/or zone rates were assumed. Although it might be argued that these assumptions lead to unduly high basic costs, they actually result in a conservative, worst-case scenario test of affordability. Utilities that use seasonal and/or zone rates might opt to calculate basic costs by averaging across time and/or space. However, the current analysis uses a worst-month scenario to calculate affordability because a low-income household is most likely to be stressed by a single high bill than its average bill. Because basic service is assumed to include indoor use only, the same volume is applied to both water and sewer charges.

In most cases, water and sewer services are provided by a single organization (e.g., a city government). In cases in which different entities provide water and sewer services, costs were calculated using the rate structures from both organizations. Some of the utilities in this analysis calculate bills in thousand gallon units, whereas others use hundred cubic foot units; in each case, bills were calculated in the appropriate units for the utility being analyzed.

Many utilities (including several analyzed here) offer discount, subsidy, or other assistance programs aimed at improving affordability. Crucially, the current analysis does not account for such assistance programs in assessing affordability because the analytical goal is to measure affordability in the absence of policy intervention. In this sense, accurate affordability measurement helps gauge the need for assistance programs. Including assistance programs would complicate attempts to measure affordability across large numbers of utilities because such programs

vary widely in scope, structure, and implementation. When using AR₂₀ and HM to analyze rates in a utility, calculations can be made with and without assistance programs to understand their potential effects.

Income data—including 20th percentile household income—were drawn from the 2015 American Community Survey five-year estimates. Essential nonwater/sewer expenses were estimated on the basis of the Bureau of Labor Statistics’ 2015 Consumer Expenditure Survey (CEX), which includes a probability-weighted national sample of 23,683 households that reported several categories of expenditures as well as income and demographic information. The American Community Survey and CEX data include public assistance programs in determining net income. These data were used to develop regression models that estimate essential expenditures (e.g., taxes, health care, food, housing, home energy) for low-income households. The CEX includes intentional oversamples of several metropolitan areas. Where the CEX included more than 200 households from a given utility’s service area, those data were used to calculate essential expenditures for that utility. For all other utilities, the full national sample was used to estimate essential expenditures. These regression models are reported in the appendix. CEX sampling is based on metropolitan areas, whereas the present affordability analysis is based on cities. This sampling unit mismatch limits the accuracy of the essential expenditure estimates used here because expenses can vary considerably within metropolitan areas. Metropolitan area subsamples are used when available because they are likely to be more representative of their respective cities than the full national sample. Coefficients from these models were combined with parameters for each city; the essential expenditures were then estimated at each city’s 20th income percentile, assuming a four-person household and single-family home. The legal minimum wages in each utility’s political jurisdiction that was in effect on June 1, 2017, were used to calculate HM.

Example: Dallas, Tex. Analysis of affordability in Dallas provides an illustration of how these affordability metrics are calculated. Table 1 shows the monthly basic water and sewer cost calculation for Dallas. Dallas bills water service using units of 1,000 gal; at 50 gpcd, basic service for a four-person household is 6,200 gal monthly. Dallas water rates include a fixed monthly charge of \$5.25 for a 5/8 in. meter and increasing block volume charges of \$1.90/1,000 gal for the first 4,000 gal and \$4.25/1,000 gal for volumes of 4,000 to 10,000 gal. (Dallas water rates include additional blocks that apply for volumes beyond the basic demands analyzed here.) The city’s sewer rates include a fixed monthly charge of \$4.70 and a uniform \$5.31/1,000 gal winter average volume. These rates generate a basic cost of \$59.82/month.

Table 2 combines this basic monthly cost with income, essential expenditure, and minimum wage information to illustrate the calculation of AR₂₀ and HM values for Dallas, where 20th percentile household annual income is \$18,585 (\$1,549 monthly) and minimum wage is \$7.25/h. A four-person household in Dallas at that income level would have

TABLE 1 Basic monthly water and sewer costs, Dallas, Tex.^a

Monthly basic volume—gal	6,200
Water charges	
Fixed	\$5.25
Volume (4,000 gal at \$1.90/1,000 gal, 2,000 gal at \$4.25/1,000 gal)	\$16.95
Sewer charges	
Fixed	\$4.70
Volume (6,200 gal at \$5.31/1,000 gal)	\$32.92
Total water and sewer charges	\$59.82

^aBased on 2017 rates

estimated essential expenses of \$864/month, leaving \$685 as disposable income. The basic water and sewer cost of \$59.82 thus translates into an AR₂₀ of 8.74% and an HM of 8.25. In plain language, this result indicates that basic water and sewer service costs a lower-middle class, four-person household in Dallas ~9% of its disposable income, or ~8 h of HM.

A big-city snapshot. The results of this affordability analysis for the top 25 US cities are reported in Table 3, which is arranged by population. The average single-family residential bill at 6,200 gal (8.3 ccf) across these cities is \$83.58/month, although costs and rate structures vary considerably across these cities, from a low of \$39.68 (Phoenix, Ariz.) to a high of \$180.70 (Seattle, Wash.). Incomes also vary widely, with AR₂₀ ranging from \$9,436 (Detroit, Mich.) to \$33,342 (San Jose, Calif.) annually. After accounting for essential nonwater/sewer expenses, disposable income averages \$780/month. Hourly minimum wages vary from the federally mandated \$7.25 to Seattle’s \$15.00.

TABLE 2 Affordability metrics for Dallas, Tex.^a

A. Basic monthly water and sewer cost	\$59.82
AR	
B. AR ₂₀ annual income	\$18,585.00
C. Monthly income (B ÷ 12)	\$1,548.75
D. Estimated monthly essential expenses ^b	\$864.11
E. Monthly disposable income (C - D)	\$684.64
AR ₂₀ (A ÷ E)	8.74%
HM	
F. Minimum wage per hour	\$7.25
HM (A ÷ F)	8.25

AR—affordability ratio, AR₂₀—affordability at the 20th income percentile, HM—hours of labor at minimum wage

^aBased on 2017 rates

^bEstimates based on regression analysis of 2015 Consumer Expenditure Survey. See appendix.

TABLE 3 Affordability in largest 25 US cities in 2017^a

Population Rank	City, State	Monthly Basic Service Cost \$	20th Percentile Annual Income \$	Affordability Ratio, Four-Person Household		Minimum Wage \$	HM
				Estimated Disposable Monthly Income at 20th Percentile \$	AR ₂₀ %		
1	New York, N.Y.	81.78	18,085	579	14.1	12.00	6.8
2	Los Angeles, Calif.	73.11	19,063	888	8.2	10.50	7.0
3	Chicago, Ill.	47.27	17,386	576	8.2	10.50	4.5
4	Houston, Tex.	74.87	19,109	642	11.7	7.25	10.3
5	Phoenix, Ariz.	39.68	21,401	825	4.8	10.00	4.0
6	Philadelphia, Pa.	58.54	13,546	524	11.2	7.25	8.1
7	San Antonio, Tex.	55.16	19,517	933	5.9	7.25	7.6
8	San Diego, Calif.	108.71	26,381	636	17.1	11.50	9.5
9	Dallas, Tex.	59.82	18,585	685	8.7	7.25	8.3
10	San Jose, Calif.	104.47	33,342	1,188	8.8	10.5	9.9
11	Austin, Tex.	91.20	24,438	1,108	8.3	7.25	12.6
12	Jacksonville, Fla.	68.23	19,817	873	7.8	8.05	8.5
13	San Francisco, Calif.	176.85	24,946	658	26.9	13.00	13.6
14	Columbus, Ohio	106.36	18,784	840	12.7	8.15	13.1
15	Indianapolis, Ind.	97.60	17,395	724	13.5	7.25	13.5
16	Fort Worth, Tex.	66.67	21,817	831	8.0	7.25	9.2
17	Charlotte, N.C.	68.84	23,135	1,044	6.6	7.25	9.5
18	Seattle, Wash.	180.70	27,290	961	18.8	15.00	12.0
19	Denver, Colo.	64.91	21,698	884	7.3	9.30	7.0
20	El Paso, Tex.	54.45	17,879	787	6.9	7.25	7.5
21	Washington, D.C.	112.51	22,526	785	14.3	11.5	9.8
22	Boston, Mass.	99.51	14,913	618	16.5	11.00	9.0
23	Detroit, Mich.	92.68	9,436	379	24.4	8.90	10.4
24	Nashville, Tenn.	65.95	21,153	926	7.1	7.25	9.1
25	Memphis, Tenn.	39.53	14,913	618	6.4	7.25	5.5
	25-city average	83.58	20,262	780	11.4	9.19	9.0

AR₂₀—affordability at the 20th income percentile, HM—hours of labor at minimum wage

^aDoes not include low-income assistance programs

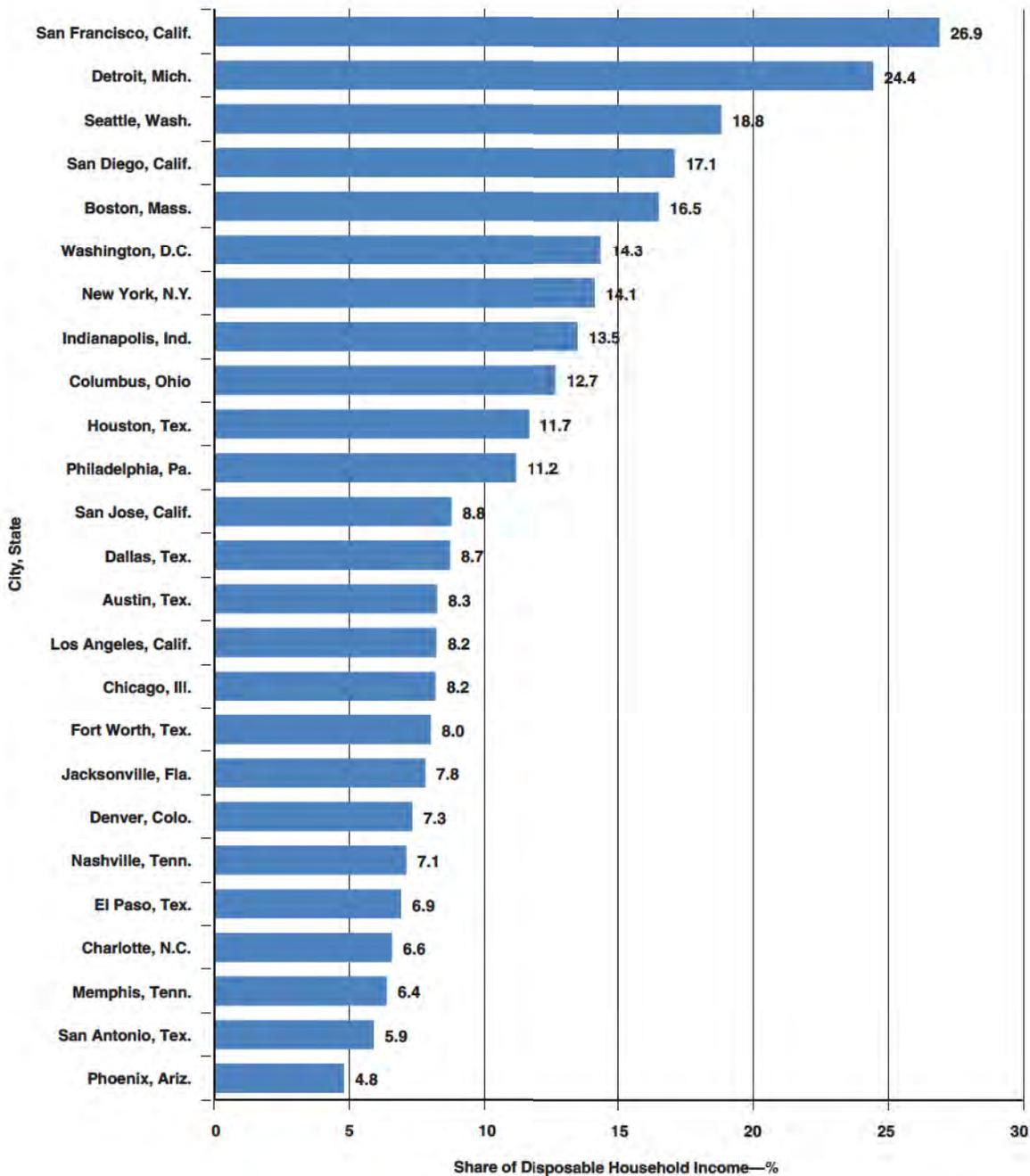
The resulting AR₂₀ values average 11.4%, ranging from a low of 4.8% in Phoenix to a high of 26.9% in San Francisco. In terms of labor, basic monthly water and sewer service in the top 25 cities average 9.0 HM, with Phoenix and San Francisco again at the ends of the distribution (4.0 and 13.6 HM, respectively). Figures 1 and 2 depict these AR₂₀ and HM results, with cities arranged from most to least affordable. These results should be considered with some caution because the assumptions underlying the AR₂₀ and HM calculations may not be appropriate for all 25 cities and, as noted previously, do not reflect low-income assistance programs that some utilities provide.

The results appear to follow from several factors. Although discussions of utility affordability frequently focus on costs

and revenue requirements, a cursory review of these 25 cities suggests that rate structures, particularly the level of fixed charges and rates paid for the first few units of water, also significantly affect affordability for low-income households. Put another way, from a low-income affordability perspective, how a utility collects rate revenue can be as important as how much total revenue it collects. The method applied here reveals the less obvious but critical ways that income distributions and essential nonwater/sewer expenses affect affordability, which are variations not reflected in the conventional %MHI metric.

The significance of these metrics becomes clearer when compared with the conventional %MHI approach to measuring affordability. Consider Dallas (AR₂₀ = 8.7, HM = 8.3) and Boston (AR₂₀ = 16.5,

FIGURE 1 Basic water and sewer service AR₂₀ for the 25 largest US cities in 2017

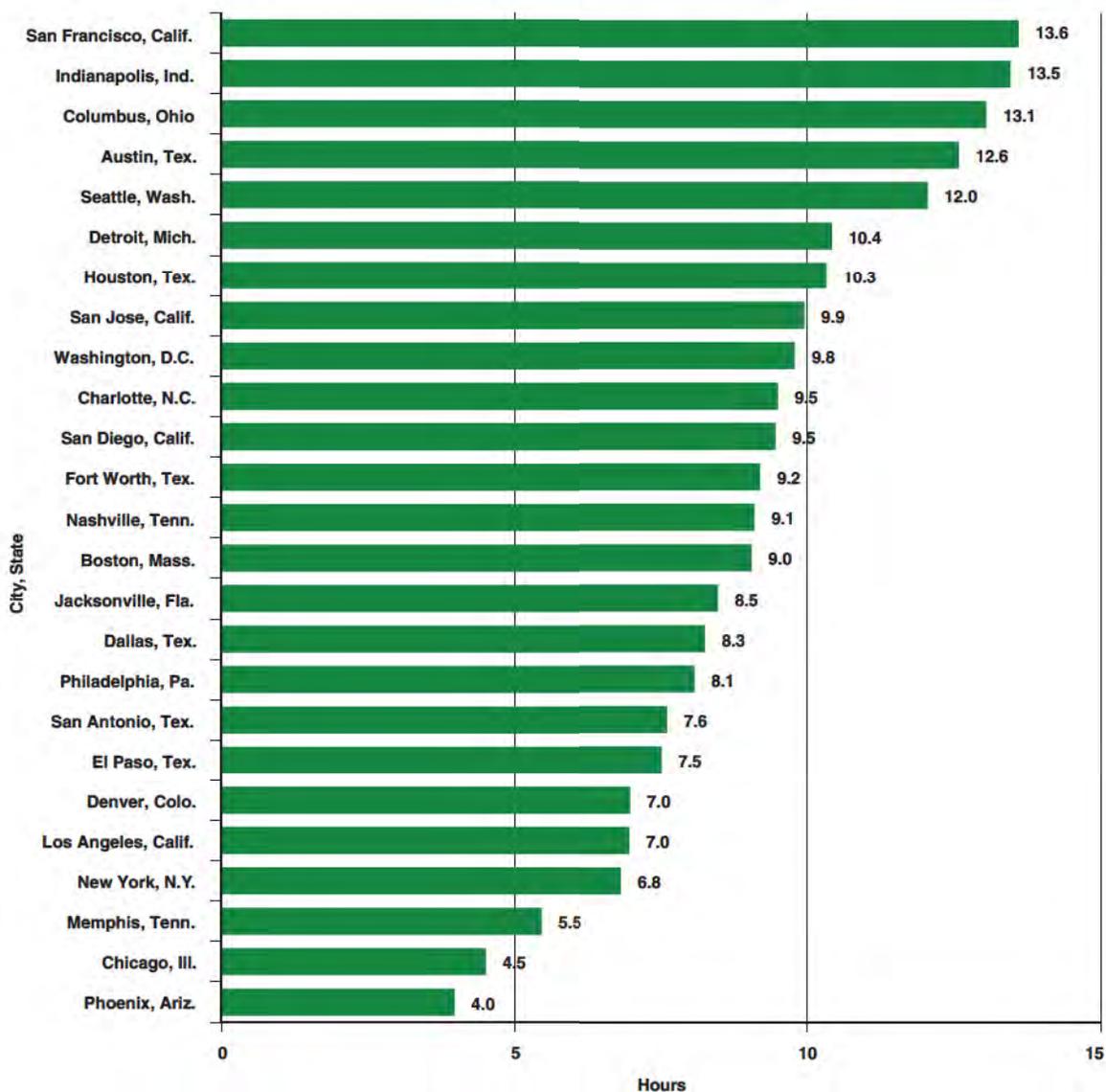


AR₂₀—affordability at the 20th income percentile

HM = 9.0): average single-family residential water consumption in Dallas is 8,300 gal, with billed sewer volume at 5,500 gal, resulting in an average bill of \$65.04 (DWU 2016). With a median annual income of \$43,781, the conventional metric puts Dallas’ water rates at 1.8%MHI, which is well below typical affordability thresholds. Boston’s average combined monthly average water and sewer bill is \$87.83 and its median

income is \$62,775, making its average water and sewer cost just 1.7%MHI (BWSC 2017). Naïve application of the conventional standard to Dallas and Boston would lead to the conclusion that these two cities’ water and sewer rates are affordable according to USEPA standards, and that they are roughly comparable in terms of affordability. The AR₂₀ and HM metrics indicate that the real economic burden of these

FIGURE 2 Basic water and sewer service HM for the 25 largest US cities in 2017



HM—hours of labor at minimum wage

services is markedly greater for low-income households in Boston than in Dallas. (Data necessary for calculation of average sewer bills were not available for all 25 cities.)

DISCUSSION

With improved affordability metrics and a snapshot of affordability in major US cities established, discussion now turns to their limitations, implications, and applications.

Limitations. Although AR₂₀ and HM offer major improvements over the conventional method of assessing affordability, they are not perfect. A clear drawback of the AR₂₀ is the relative complexity of estimating it with the data typically available to analysts. Although AR₂₀ is intuitive, estimating disposable household

income in a given community requires a level of effort and/or technical sophistication greater than what is required of the conventional method. For all of its drawbacks, %MHI has back-of-the-envelope simplicity (even if that simplicity is misguided and misleading). Complexity is not an insurmountable barrier to using these metrics for any specific utility, however. Regression analysis of CEX data is not necessary for AR₂₀ calculations in a single utility, and, for most, income distribution and reasonably accurate essential household estimates are possible with locally available data.

Two additional limitations are more serious for purposes of advancing the cause of affordability and should be considered when using AR₂₀ and HM. First, the metrics

advanced here focus on single-family residential customers. Theoretically, the same metrics could be applied to any class of customer, but measuring affordability for households in multifamily or rental housing is difficult or impossible if those households do not pay their own water and sewer bills. Assessing and addressing affordability for these “hard to reach” customers is a perennial, vexing challenge for utilities (Raucher et al. 2017); unfortunately, the metrics advanced here offer little leverage on that challenge.

Second, and more fundamentally, AR₂₀ and HM measure affordability; they do not define it. The metrics advanced here can significantly clarify the scope of the water and sewer affordability issues that utilities face, but they cannot in themselves define affordability.

What is affordable? Water and sewer affordability is a matter of community priorities. When confronting affordability questions, utility leaders and policymakers are actually asking: How much is reasonable to expect households of limited means to pay for these essential services? What economic sacrifices are reasonable to expect low-income households to make in order to pay water and sewer bills?

These are fundamentally normative questions. No metric, however well conceived and executed, can in itself define what is affordable; there is no scientific answer to a philosophical question. Just as incomes and essential expenditures vary from one community to another, so can social and political values: what one community considers affordable may not be considered affordable elsewhere.

As noted previously, one of the main weaknesses of conventional affordability analysis is that it declares utility rates “unaffordable” or “affordable” because they fall above or below a combined 4.0 or 4.5% MHI threshold—golden numbers with no underlying rationale. In the public policy arena, these arbitrary standards tend to preclude or preempt meaningful discussion of affordability. Better measurement of affordability can facilitate clearer thinking and discussion, and the metrics introduced here can serve as a framework.

Beware of cross-utility comparisons. The affordability snapshot of the 25 utilities developed here is interesting in its own right because it depicts the general state of affordability in large US cities; however, this snapshot is not especially useful for setting affordability policy in any given utility. There is a common (perhaps innate?) human tendency to think about performance in comparison with others, so it is tempting to think about a utility’s affordability relative to others when developing policy. This kind of comparison distracts from the core issue of affordability. As a metaphor, consider water treatment: no responsible engineer would recommend a treatment technology for Boston based on measurements of average source water quality in the other top 25 cities; for purposes of designing treatment processes, the only relevant measurement is of Boston’s source water. Developing affordability policy according to other utilities’ affordability metrics is like designing a treatment plant for other communities’ average source water. Utility rates and

affordability programs ought to reflect their own communities’ needs and values, not those observed elsewhere.

For these reasons, utility leaders and policymakers should resist the temptation to make decisions about affordability in their communities based on affordability conditions nationally or in neighboring communities. The relevant question is not how affordable our water and sewer rates are compared with other communities but rather if they are consistent with the value our community places on affordability.

Rules of thumb. Bearing in mind the dangers of “golden numbers” and cross-utility comparison, some simple rules of thumb for evaluating water and sewer affordability are offered here in response to queries from professionals and policymakers grappling with affordability in their utilities. These guidelines are not rooted in any theory of welfare economics, law, or philosophy; they simply reflect an intuitive answer to what trade-offs low-income households should be expected to make in order to pay for basic water and sewer service. The following double-barreled standard is suggested:

- an AR₂₀ value of no more than 10%, so that a four-person household at the 20th income percentile pays no more than 10% of its disposable income on water and sewer service, and
- an HM value of no more than 8.0, so that a four-person household’s basic monthly water and sewer bill requires no more than 8 h of labor at minimum wage.

These two standards have some visceral appeal (“10%, one day”), but the intuition behind them is that water and sewer are essential services, so it is reasonable to ask low-income customers to pay up to 10% of disposable income and/or work up to one full day at minimum wage to pay for them. Beyond these levels, water and sewer costs may begin to severely constrain the welfare and economic opportunities of low-income households.

Analysts, utility leaders, policymakers, and interested observers are urged to use these rules of thumb not as new golden numbers to supplant the conventional %MHI standard, but as starting points for discussion and development of affordability policies for their own utilities. These rules can help frame efforts to define affordability locally. Mumm and Ciaccia’s (2017) pairwise comparison approach offers promising means of inferring community values about affordability, for example.

Based on the present analysis, 14 of the 25 largest US cities meet the first rule of thumb; only eight satisfy the second. Do these findings indicate that cities that fail to meet these standards have an affordability problem? Not necessarily. Several utilities fall just above or below the 10%/8 h thresholds; therefore, it would be simplistic to declare them “affordable” or “unaffordable” on the basis of rules of thumb. In some cases—most conspicuously, Detroit—high AR₂₀ figures are driven more by very low 20th percentile incomes than by utility rates and so may not reflect the range of public assistance programs available to extremely low-income households. In other cases, 50 gpcd indoor water use may be an unrealistically high level of water use. Many of these utilities

use assistance programs to help address affordability concerns in ways that are not captured in AR₂₀ or HM. Moreover, utility rates that exceed the rules of thumb may nevertheless be consistent with their communities' understanding of affordability. On the other hand, it is possible that some of these utilities have serious affordability challenges that are underappreciated because they satisfy a %MHI convention. The best solutions for any affordability problems identified with these metrics will vary from one utility to another.

Implications for practice. Better measurement can facilitate better decisions. Utility leaders, policymakers, and regulators should abandon %MHI as a measure of household water and sewer affordability. Instead, better metrics like AR₂₀ and HM should be used when setting rates or developing affordability programs, because they capture the kinds of welfare tradeoffs that utility rates force low-income households to make. When considering alternative rate structures, budgets, and affordability programs, policymakers should tailor the AR₂₀ and HM metrics to reflect local conditions, compare the AR₂₀ and HM that would result under various alternatives, and then set policies to align those results with their communities' priorities. Abandoning the flawed convention in favor of the metrics advanced here can greatly strengthen the way that the utility community thinks about and responds to affordability concerns.

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Appendix: Household Expenditure Estimates

The following tables report the regression models used to estimate essential household incomes using the 2015 Consumer Expenditure Survey (CEX) interview data. Essential expenses were calculated as the sum of average quarterly household expenditures on housing (CEX variable *sheltpq*), food (*foodpq*), health care (*healthpq*), home energy (*ntlaspq+elctrcrpq+allfulpq*), and taxes (*totxest*), divided by 3 to represent monthly expenditures. Ordinary least squares (OLS) regression models employed robust standard errors to correct for heteroskedasticity, and

applied the CEX's sampling weights (*finlwt21*). Models were estimated for all cities for which the CEX included at least 200 responses; cities with fewer than 200 responses were estimated using the national data set. Regression results are reported in Tables A1 and A2.

The coefficients from these models were used to estimate essential household expenditures at the 20th income percentile for each city, single-family home, and a four-person household. All other variables were estimated at the city's mean values.

TABLE A1 Essential household expenditure estimation models

DV: Log Essential Household Expenditures	National Sample	New York City	Los Angeles	Chicago	Houston	Phoenix	Philadelphia
Household size	-0.035 (0.005)	-0.027 (0.019)	-0.096 (0.023)	-0.019 (0.015)	-0.077 (0.036)	-0.01 (0.029)	-0.095 (0.091)
Single-family home	0.0332 (0.017)	0.076 (0.050)	0.056 (0.057)	0.148 (0.064)	0.148 (0.197)	0.507 (0.109)	0.125 (0.027)
High school graduate	0.134 (0.020)	0.194 (0.062)	-0.073 (0.076)	0.015 (0.101)	0.109 (0.132)	0.109 (0.134)	0.205 (0.103)
College graduate	0.279 (0.012)	0.236 (0.041)	0.227 (0.049)	0.213 (0.048)	0.437 (0.110)	0.319 (0.093)	0.080 (0.063)
Married	0.208 (0.012)	0.017 (0.044)	0.181 (0.060)	0.185 (0.055)	0.298 (0.090)	0.158 (0.085)	0.292 (0.070)
Black	-0.122 (0.017)	-0.088 (0.056)	-0.164 (0.065)	-0.264 (0.079)	-0.584 (0.139)	-0.547 (0.233)	0.044 (0.071)
Native American/Indian	-0.147 (0.078)	0.262 (0.260)	0.156 (0.334)		-0.109 (0.229)	0.145 (0.209)	
Asian/Pacific Islander	0.021 (0.022)	-0.091 (0.062)	-0.221 (0.072)	-0.118 (0.079)	-0.008 (0.108)	0.201 (0.206)	-0.040 (0.133)
Multi-race	-0.075 (0.047)	0.031 (0.067)	-0.287 (0.127)	-0.506 (0.194)	-0.159 (0.350)	-0.526 (0.609)	-1.436 (0.472)
Hispanic	-0.098 (0.017)	-0.052 (0.050)	-0.250 (0.058)	-0.254 (0.073)	-0.177 (0.122)	-0.118 (0.095)	0.169 (0.118)
Income (log)	0.558 (0.011)	0.609 (0.031)	0.675 (0.047)	0.555 (0.033)	0.247 (0.090)	0.488 (0.044)	0.575 (0.030)
Homeowner	-0.018 (0.014)	0.025 (0.045)	-0.025 (0.051)	-0.106 (0.062)	-0.097 (0.186)	-0.104 (0.089)	0.027 (0.078)
Urban	0.301 (0.017)						
Intercept	0.728 (0.103)	0.695 (0.307)	0.307 (0.469)	1.339 (0.335)	4.496 (0.892)	1.495 (0.425)	0.906 (0.285)
R ²	0.530	0.595	0.544	0.704	0.367	0.601	0.631
N	23,254	1,533	1,166	795	406	300	562

DV—dependent variable

Cells contain coefficients (robust standard errors in parentheses).

TABLE A2 Essential household expenditure estimation models (continued from Table A1)

DV: Log Essential Household Expenditures	Dallas and Fort Worth	San Jose and San Francisco	Seattle	Denver	Washington	Boston	Detroit
Household size	0.008 (0.022)	0.026 (0.038)	-0.004 (0.037)	-0.008 (0.025)	-0.033 (0.030)	-0.116 (0.024)	-0.023 (0.029)
Single-family home	-0.009 (0.113)	0.167 (0.091)	-0.06 (0.134)	0.181 (0.108)	0.092 (0.098)	0.004 (0.113)	0.336 (0.128)
High school graduate	0.291 (0.113)	0.327 (0.183)	0.405 (0.219)	0.461 (0.225)	-0.022 (0.198)	0.150 (0.175)	0.049 (0.260)
College graduate	0.197 (0.058)	0.254 (0.084)	0.281 (0.008)	-0.158 (0.066)	0.239 (0.085)	0.065 (0.065)	0.332 (0.067)
Married	0.140 (0.085)	-0.080 (0.087)	-0.096 (0.081)	-0.011 (0.087)	0.114 (0.088)	0.325 (0.078)	-0.001 (0.090)
Black	0.072 (0.085)	-0.651 (0.158)	-0.347 (0.116)	0.172 (0.180)	-0.057 (0.093)	0.566 (0.128)	-0.017 (0.085)
Native American/Indian	0.341 (0.217)			-0.050 (0.278)	0.079 (0.086)		-0.242 (0.084)
Asian/Pacific Islander	-0.077 (0.010)	-0.036 (0.089)	0.183 (0.101)	-0.019 (0.146)	-0.115 (0.104)	-0.239 (0.367)	0.242 (0.098)
Multi-race	-0.334 (0.161)	-0.108 (0.118)	0.302 (0.247)	-0.672 (0.170)	-0.236 (0.186)	-0.714 (0.319)	
Hispanic	-0.312 (0.079)	0.126 (0.097)	-0.400 (0.260)	-0.093 (0.115)	-0.155 (0.094)	-0.277 (0.152)	0.301 (0.096)
Income (log)	0.426 (0.044)	0.638 (0.055)	0.503 (0.072)	0.754 (0.055)	0.641 (0.068)	0.645 (0.048)	0.737 (0.077)
Homeowner	0.009 (0.109)	-0.231 (0.071)	-0.008 (0.101)	-0.571 (0.094)	-0.112 (0.086)	-0.050 (0.076)	-0.216 (0.110)
Intercept	2.330 (0.443)	0.264 (0.623)	1.640 (0.734)	-1.015 (0.613)	0.568 (0.739)	0.508 (0.576)	-0.945 (0.838)
<i>R</i> ²	0.556	0.726	0.521	0.674	0.574	0.704	0.632
<i>N</i>	449	327	280	261	413	285	323

DV—dependent variable

Cells contain coefficients (robust standard errors in parentheses).

EXECUTIVE SUMMARY

ARR retained Burns & McDonnell to conduct a comprehensive, data-driven benchmarking study of public and private solid waste collection operators in Texas at the direction of the Austin City Council. The primary objective of the study was to provide a basis for assessment of ARR's affordability and sustainability of services to customers. Key findings include:

Rates and service types. Austin's monthly rate is in the highest quarter of benchmark cities based on the 64-gallon cart rate but is in the mid-range based on the 32-gallon cart rate. When the Clean Community Fee is added to the monthly solid waste rate, Austin's total monthly fees appear higher than the benchmark cities. However, Austin's Clean Community Fee provides many additional services that are either not provided by other benchmark cities or are funded through other sources or departments. Austin is the only city that provides all benchmarked services. Austin and San Antonio are the only cities that provide six types of regular collections: refuse, recycling, bulk, brush, yard trimmings, and organics.

Recycling percentages and pay-as-you-throw (PAYT). Austin has the highest recycling percentage (38%) among benchmark cities, including other large Texas cities with established recycling goals. Like Austin, Fort Worth and San Antonio have PAYT rate structures. Compared to these cities, Austin has a larger price differential between the rates charged for the largest and smallest cart sizes. This policy was designed to incentivize recycling. After the City increased the price differential between the largest (96-gallon) and smaller cart sizes (24-, 32-, and 64-gallons) in 2013, the residential cart size distribution has shifted toward the smaller cart sizes. This trend indicates an increase in recycling percentages and/or an increase in waste reduction by residential customers, both supporting the City's Zero Waste goals.

Affordability. There is not a standard measure of affordability among municipal solid waste programs. The metric of total annual costs to households as a percentage of median household income, a common affordability measure among municipal water and wastewater utilities, was utilized. Among benchmark cities, the average annual cost as a percentage of median household income is 0.42 percent. For Austin, this metric is 0.48 percent, 0.06 percent above the average.

Potential Cost Reduction Options. ARR and Burns & McDonnell developed options that may be implemented to potentially reduce costs of providing solid waste services. The options are intended only to communicate potential cost reduction strategies that the City may decide to further consider and are not meant to present recommendations for action. Identified options address the potential for reducing collection operations, enhanced processing and disposal alternatives, reducing support of non-solid waste services/programs, changing City Council policies, or entering commercial collection operations.

Affordability Benchmarking Study



City of Austin, Texas

12/4/2018

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Affordability Benchmarking Study

prepared for

City of Austin, Texas

12/4/2018

prepared by

**Burns & McDonnell Engineering Company, Inc.
Austin, Texas**

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LIST OF ATTACHMENTS

Attachment A: City Council Resolution No. 20180201-068

Attachment B: Detailed Benchmark Data Matrix

Attachment C: Organizational Structure

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EXECUTIVE SUMMARY

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1.0 INTRODUCTION

Under Resolution No. 20180201-068 (please reference Attachment A), adopted on February 1, 2018, the Austin City Council directed Austin Resource Recovery (ARR) to provide information about internal benchmarks that the City’s utilities use when assessing affordability and sustainability of the utilities’ services to customers. To fulfill this directive, ARR retained Burns & McDonnell to conduct a comprehensive, data-driven benchmarking study of public and private solid waste collection operators in Texas. The scope of this study included data gathering, review, and analysis of their programs, structures, commitments, goals, and background information on efforts relating to sustainability, Zero Waste, landfill diversion, and other components outlined by the City. This report presents the results of the benchmarking study conducted by Burns & McDonnell.

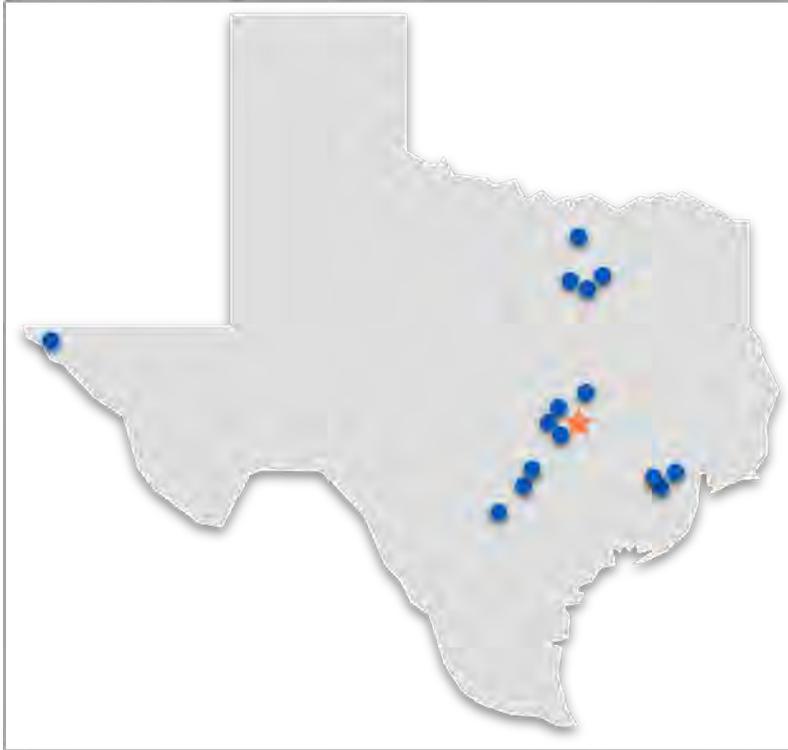
2.0 METHODOLOGY

Based on the project scope and the direction from the City during the project kick-off meeting held with ARR staff on July 12, 2018, Burns & McDonnell developed an Excel-based benchmarking matrix to capture the data and information required to complete the study. Burns & McDonnell gathered publicly available data and then contacted the appropriate solid waste personnel at each of the benchmark cities to obtain the remaining data that was not publicly available. Data from solid waste personnel was gathered through a combination of phone call interviews and electronic data requests and responses.

The 15 benchmark cities that were approved by ARR and contacted by Burns & McDonnell are provided below.¹ Figure 1 provides a geographic depiction of the benchmark cities.

- Anderson Mill
- Arlington
- Dallas
- Denton
- El Paso
- Fort Worth
- Georgetown
- Houston
- Missouri City
- New Braunfels
- Pflugerville
- Round Rock
- San Antonio
- San Marcos
- Sugar Land

¹ This analysis contains partial data for Round Rock, as Burns & McDonnell was unable to reach City staff for an interview. Data included for Round Rock includes publicly available data and data obtained through prior recent benchmark studies conducted by Burns & McDonnell.

Figure 1: Benchmark City Locations

After data was obtained from the benchmark cities, Burns & McDonnell conducted various data analyses and developed key findings.

Summaries of the data, benchmark analyses, and key findings are presented throughout this report. Please reference Attachment B for the detailed benchmark data matrix.

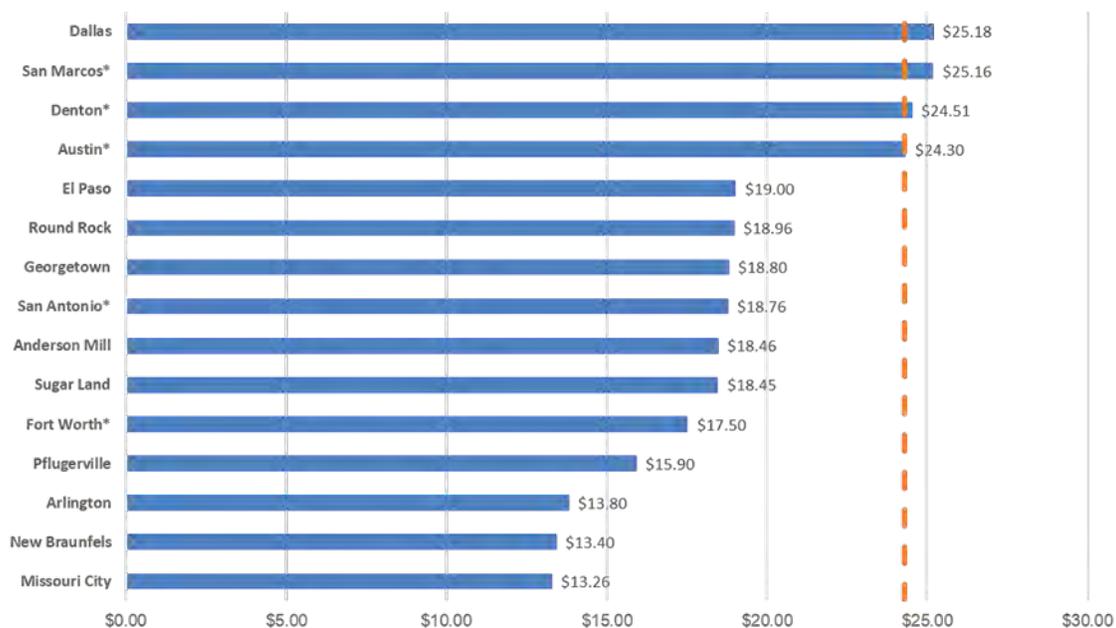
It is important to note that there are limiting factors when conducting benchmarking studies comparing different cities solid waste

management systems. There are many factors that impact each city's service offerings, cost of service, and customer rates, which makes simple comparison of customer rates and programs challenging. These factors may include but are not limited to establishment of (or absence of) sustainability or diversion goals, non-solid waste city-wide policies, regional waste generation factors, local disposal and diversion markets, and public or private provision of solid waste services.

It is necessary to gather and analyze detailed data and information to develop a comprehensive understanding of benchmarked solid waste programs and the potential implications for the City of Austin.

3.0 MONTHLY RESIDENTIAL RATES

Most benchmark cities have one monthly rate charged to all residential customers within the City. Similar to Austin, some cities including San Marcos, Denton, San Antonio and Fort Worth have a PAYT rate structure designed to increase recycling. For these cities, the rates used in the benchmark analysis are those charged for a 60/64-gallon refuse cart. Figure 2 presents a comparison of the monthly residential solid waste service rates for each benchmark city. The rates exclude any applicable sales tax.

Figure 2: Residential Monthly Rate Comparison

1. Cities marked with an * have variable residential monthly rates based on cart capacity. Rates shown for these cities are for 60/64-gallon carts.
2. Rates do not include sales tax.
3. ARR residential customers pay a monthly base fee of \$14.05 plus a per-gallon fee of \$0.16 for 64-gallon carts or smaller and \$0.30 per gallon for 96-gallon carts.
4. The City of Houston was included in the benchmark analysis but is not shown in this chart because residential solid waste services are funded by the General Fund and customers do not pay a separate monthly user fee.

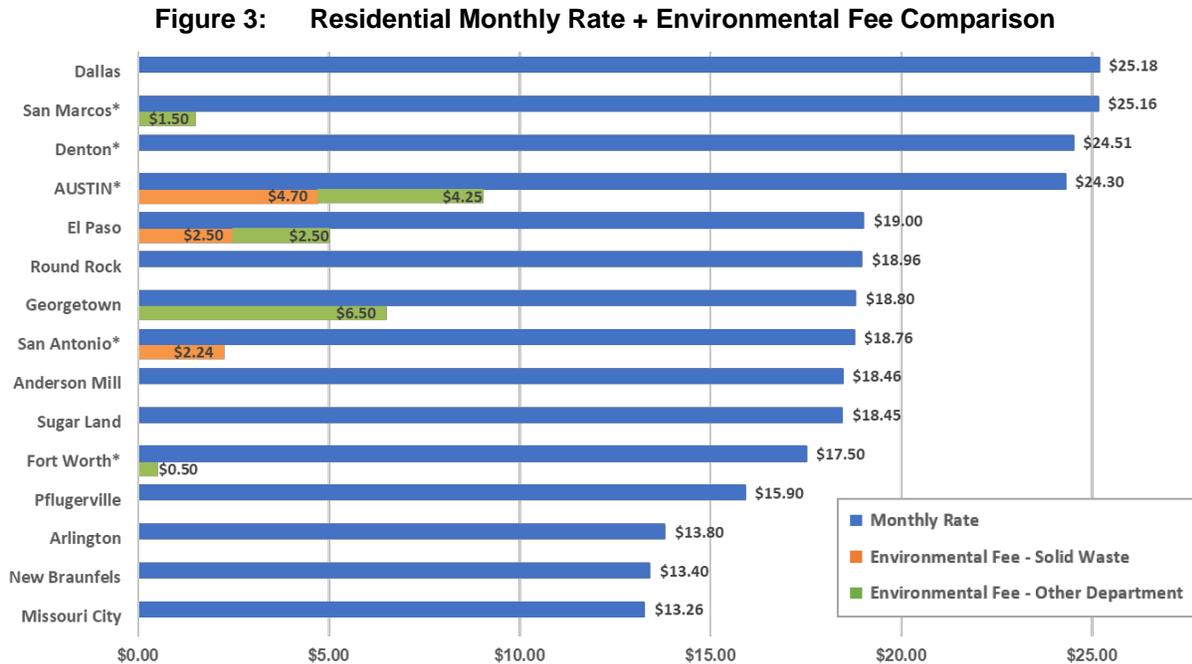
As shown in Figure 2, Austin’s monthly residential rate falls within the highest quarter of benchmark cities. The City’s rate is comparable to Denton and San Marcos, two cities that also have PAYT rate structures. Based on a 32-gallon cart size, Austin’s monthly rate of \$19.15 is close to many cities in the \$18 – 19 monthly rate range. For some cities, including Arlington and Missouri City, residential services receive supplemental funding from commercial rates in addition to monthly residential rates. This causes these cities’ residential rates appear artificially low and they do not reflect the actual cost of service for residential services.

4.0 ENVIRONMENTAL FEES + MONTHLY RESIDENTIAL RATES

There are five cities, including Austin, where residential customers pay a monthly environmental fee² in addition to monthly solid waste rates. The structure, departmental allocation, and specific services funded by these environmental fees vary greatly between cities, and therefore direct comparison is difficult.

² “Environmental fee” is a generic name used to collectively reference a fee that funds additional solid waste and/or environmentally-related services. The actual name for the fee varies by city. For example, Austin’s environmental fee is the Clean Community Fee.

Figure 3 presents a comparison of the monthly rates shown in Figure 2, with the additional comparison of the monthly environmental fees for applicable cities. For San Antonio, the full amount of the environmental fee is allocated to the city's solid waste department and is shown in orange. For Fort Worth, Georgetown, and San Marcos, the full amount of the environmental fee is allocated to other city departments and is shown in green. For Austin and El Paso, a portion of the monthly environmental fee is allocated to solid waste and a portion is allocated to other city departments.



1. Cities marked with an * have variable residential monthly rates based on cart capacity. Rates shown for these cities are for 60/64-gallon carts.
2. Rates do not include sales tax.
3. ARR residential customers pay a monthly base fee of \$14.05 plus a per-gallon fee of \$0.16 for 64-gallon carts or smaller and \$0.30 per gallon for 96-gallon carts.
4. The City of Houston was included in the benchmark analysis but is not shown in this chart because residential solid waste services are funded by the General Fund and customers do not pay a separate monthly user fee.

Key Finding. When Austin's Clean Community Fee is considered in conjunction with monthly solid waste rates, Austin's total monthly fees appear higher than the benchmark cities. However, as discussed in the next report section, Austin provides many additional services, funded by the Clean Community Fee, which are either not provided by benchmark cities, or funded by other sources or city departments.

5.0 RESIDENTIAL SERVICES COMPARISON

Burns & McDonnell developed a comprehensive matrix to visually illustrate the core residential solid waste services and additional services provided by each benchmark city and the sources by which they are funded. **Figure 4 shows only services provided with monthly solid waste rates or with an environmental fee. Figure 5 shows the same data, but also indicates where services are provided by another solid waste funding source or are provided and funded by a different city department.** For additional detail regarding services provided by each city, please reference Attachment B.

Key Finding. This comparison shows that Austin is the only city that provides all benchmarked services to its residents and community. Additionally, Austin and San Antonio are the only two cities that provide six types of separate regular material collections, including:

- Refuse
- Recycling
- Bulky
- Brush
- Yard Trimmings
- Organics

The symbol legend corresponding to both Figure 4 and Figure 5 is as follows:

Legend	
★	Provided with monthly rates
■	Material collection provided but not as separate service
◆	Provided with an environmental fee
▲	Provided with other funding source
●	Provided and funded by another city department
(blank)	Service is not provided by the city

Figure 4: Services Comparison – Funded by Monthly Rates and Environmental Fees

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
CORE SOLID WASTE SERVICES																
Refuse	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Recycling	★	★	★	★	★	★	★	★	★	★		★	★	★	★	★
Bulky	★	★	■	★	★		★	★	★	★		★	★	★	★	★
Brush	★	■	■	■	★	■	■	■	★	★	■	★		★	■	★
Yard trimmings	★	■	■	■	■	■	★	★	★	■	★	■	■	★	■	■
Organics (including food scraps)	★													★	★	
ADDITIONAL SERVICES																
Household Hazardous Waste (HHW)	◆			★	★	★		★	★		★			◆	★	★
Textiles collection	★												NR			★
Dead animal collection	◆			★		★	★		★					★◆		
Prescription medication drop-off	◆				★											
Drop-off centers	◆			★	★	★	★		★				NR	◆	★	★
Street sweeping	◆						◆	◆					NR			
Bike lane sweeping	◆						◆	★◆					NR			
Illegal dumping cleanup	◆		★	★	★	★	★		★				NR	★	◆	★
Neighborhood Clean-ups	◆					★							NR	◆		
Post-disaster response/cleanup	★◆			★	★		★		★				NR	★		
Special events	★◆	★					★		★	★	★	★	★	★	★	★
Education and outreach	★◆			★	★	★	★	★	★	★	★	★	★	★	★	★
Central Business District (CBD)	◆					◆										

★ Provided with monthly rates
◆ Provided with an environmental fee
▲ Provided with other funding source
■ Material collection provided but not as separate service
● Provided and funded by another city department (blank) Service is not provided by the city
 NR Not Reported

Figure 5: Services Comparison – All Benchmarked Services and Funding Sources

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
CORE SOLID WASTE SERVICES																
Refuse	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
Recycling	★	★	★	★	★	★	★	★	★	★	▲	★	★	★	★	★
Bulky	★	★	■	★	★	▲	★	★	★	★	▲	★	★	★	★	★
Brush	★	■	■	■	★	■	■	■	★	★	■	★	▲	★	■	★
Yard trimmings	★	■	■	■	■	■	★	★	★	■	★	■	■	★	■	■
Organics (including food scraps)	★													★	★	
ADDITIONAL SERVICES																
Household Hazardous Waste (HHW)	◆		▲	★	★	★	▲	★	★		★▲		●	◆	★	★
Textiles collection	★												NR			★
Dead animal collection	◆	●	●	★		★	★	●	★	●	●	●	●	★◆	●	●
Prescription medication drop-off	◆		●	●	★		●	●	●	●		●	●	●	●	
Drop-off centers	◆		▲	★	★	★	★	▲	★		▲	▲	NR	◆	★	★
Street sweeping	◆		●	●	●	◆	◆	●	●	●	●		NR	●	●	●
Bike lane sweeping	◆			●		◆	★◆			●			NR			
Illegal dumping cleanup	◆		★	★●	★●	★	★	▲	★	▲	▲	●	NR	★	◆▲	★
Neighborhood Clean-ups	◆			●		★		▲	▲				NR	◆		
Post-disaster response/cleanup	★◆		▲	★	★	●	★	▲	★	▲	▲	▲	NR	★	▲	▲
Special events	★◆	★		●	▲	▲	★●	▲	★	★	★	★	★	★●	★	★
Education and outreach	★◆		▲	★	★	★	★	★	★	★	★	★	★	★	★	★
Central Business District (CBD)	◆					◆	▲									

★ Provided with monthly rates
◆ Provided with an environmental fee
▲ Provided with other funding source
■ Material collection provided but not as separate service
● Provided and funded by another city department (blank) Service is not provided by the city
 NR Not Reported

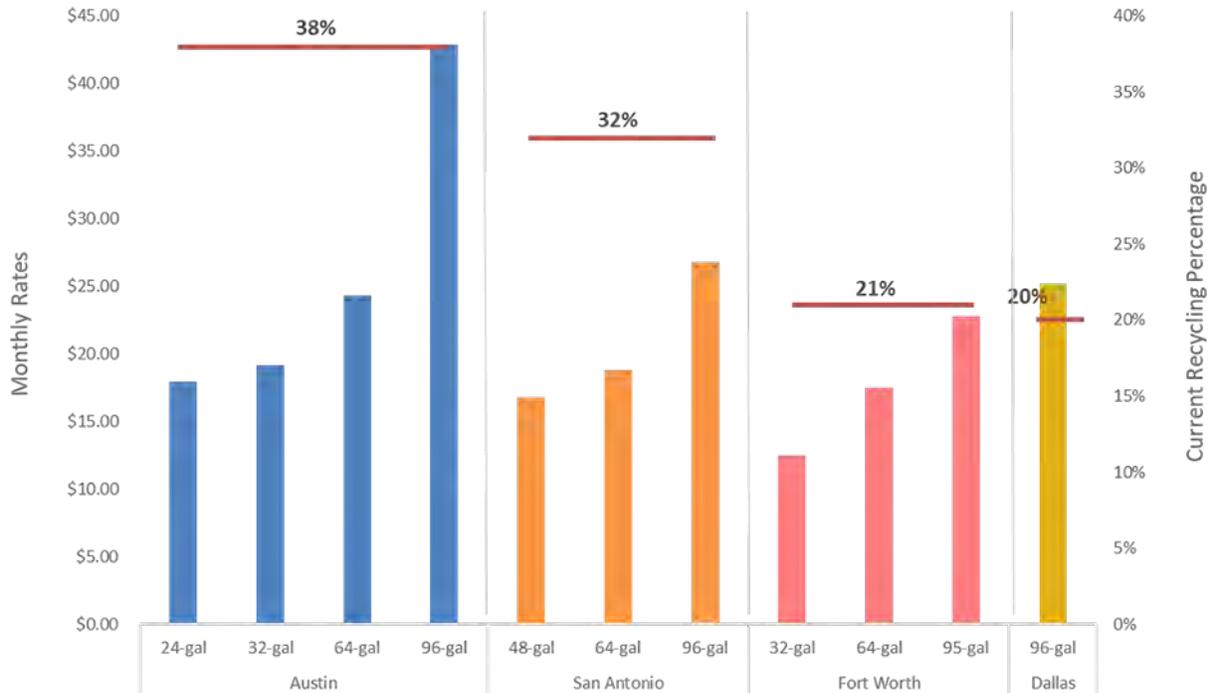
6.0 TEXAS CITIES WITH HIGH RECYCLING GOALS

It has become common for cities to set short-, mid-, and long-term goals for recycling, developing progressive program strategies and implementation plans to meet established recycling benchmarks. Among the benchmark cities included in the study, there are three other large Texas cities that have established goals to reach high recycling percentages within a defined time period: Dallas, Fort Worth, and San Antonio. Table 1 compares the recycling goals and timelines and current recycling percentages for Austin and these three cities.

Table 1: Texas Cities with High Recycling Goals

City	Recycling Goals	Current Residential Recycling Percentage
Austin	<ul style="list-style-type: none"> • 20% reduction in per capita solid waste disposal by 2012 • 75% recycling by 2020 • 90% recycling by 2040 	38%
San Antonio	<ul style="list-style-type: none"> • 60% single family residential recycling by 2025 	32%
Fort Worth	<ul style="list-style-type: none"> • 30% residential recycling by 2021 • 40% total City recycling by 2023 • 50% total City recycling by 2030 • 60% total City recycling by 2037 • 80% total City recycling by 2045 	21%
Dallas	<ul style="list-style-type: none"> • 40% recycling by 2020 • 60% recycling by 2030 • Maximize recycling by 2040 	20%

A common strategy used by cities to drive increases in recycling percentages and to meet recycling goals is to implement a PAYT rate structure. Figure 6 illustrates the residential monthly rate structures for the four cities with defined recycling goals (presented in Table 1) and the current recycling percentages achieved.

Figure 6: Variable Residential Monthly Rates & Current Recycling Percentages

Key Finding. Figure 6 shows that, compared to Fort Worth and San Antonio, Austin has a larger price differential between the rate charged for the largest refuse cart size (96-gallon) and the smaller refuse cart sizes. This was a policy decision by the City that was designed to incentivize recycling and increase the City's residential recycling percentage.

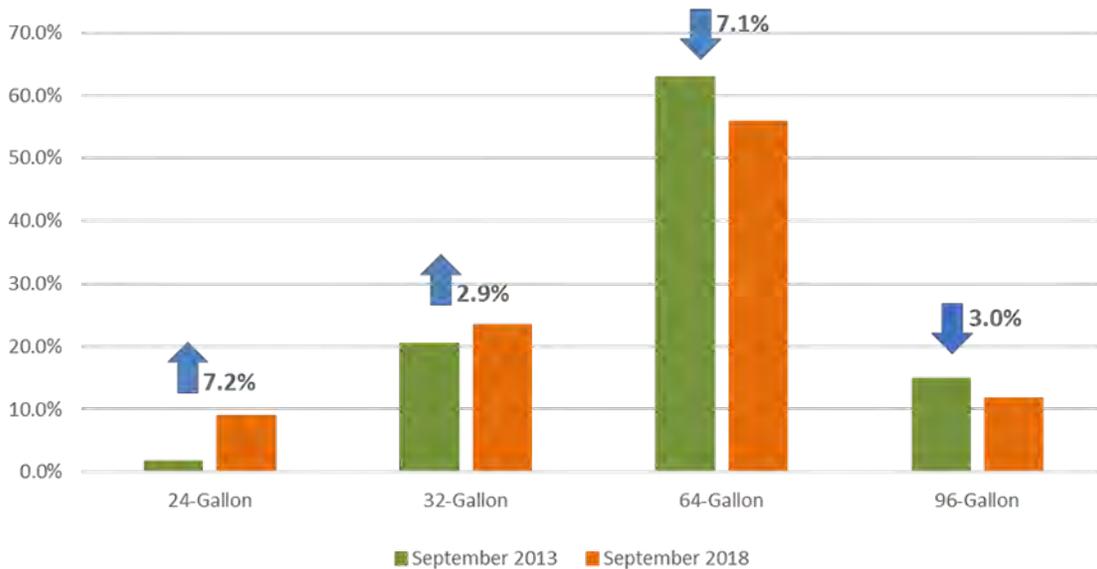
Driven in part by its higher PAYT price differential, Austin has the highest residential recycling percentage among all benchmarked cities. The following section further describes the impact of Austin's and other national cities' PAYT programs.

7.0 PAY-AS-YOU-THROW (PAYT) IMPACT

In FY 2013, ARR established the current per-gallon pricing structure for smaller refuse cart sizes (24-, 32-, and 64-gallons) at a rate of \$0.16 per gallon per month. At that time, a rate of \$0.25 per gallon was set for the largest cart size (96-gallons). The per-gallon rates are in addition to the monthly base rate. In FY 2015, ARR further differentiated the cost of the 96-gallon cart by increasing the per-gallon rate to \$0.30 per month while maintaining the \$0.16 per month rate for all other cart sizes. Figure 7 shows the changes in cart size distribution the City has seen in response to increasing the price differential between the largest cart (96-gallons) and all smaller cart sizes (24-, 32-, and 64-gallons).

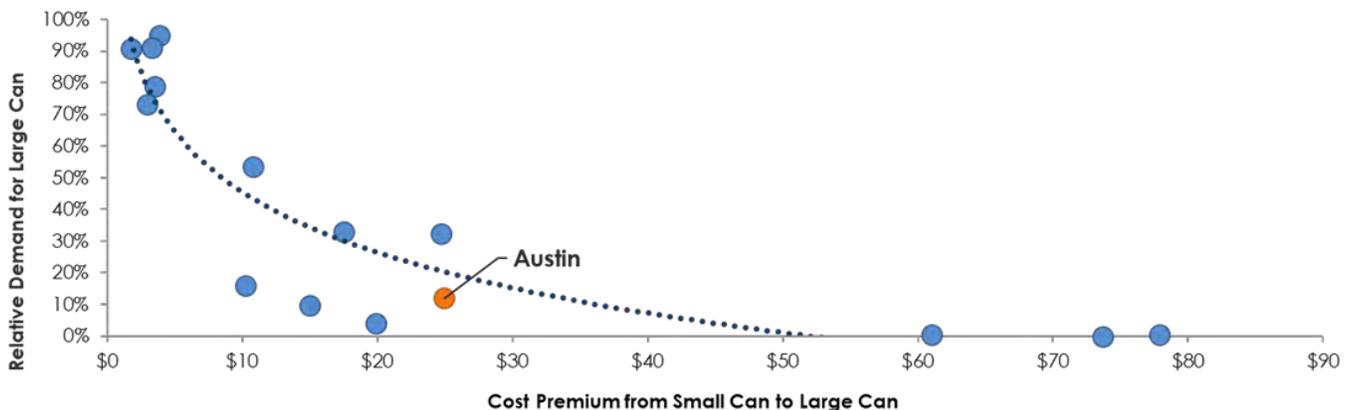
Key Finding. The trend toward small refuse cart sizes indicates either an increase in recycling percentages and/or an increase in waste reduction by residential customers, both of which support the City’s Zero Waste goals.

Figure 7: Pay-As-You-Throw (PAYT) Cart Size Distribution – 2013 to 2018



Key Finding. While not included in the broader benchmarking study, multiple other U.S. cities also have PAYT solid waste rate structures. Figure 8 shows each city’s cost premium from the smallest can to the largest can (the difference in monthly rates) compared with the relative demand for a large refuse cart (percent of residents with choosing a large cart). Austin has achieved relatively low large cart demand with a moderate cost premium.

Figure 8: U.S. Cities with PAYT: Relative Large Cart Demand & Cost Premium



8.0 SUPPORTED OR SHARED SERVICES

ARR provides support for some services in addition to residential solid waste and recycling services, which may have an impact on costs to ARR. Table 2 summarizes the additional supported or shared services provided by Austin and comparable support provided by benchmarked cities' solid waste departments.

Table 2: Comparison of Supported or Shared Services

Supported or Shared Service	Support Level Provided by Austin	Comparable Support from Other Cities
Central Business District collections	<ul style="list-style-type: none"> • Provided through third-party contractor; customers pay fees directly to contractor • Contractor provides collection, alley maintenance, and special events within Downtown 	<ul style="list-style-type: none"> • Provided by only two other cities, El Paso and Fort Worth • Not funded by residential rates • Similar, third-party or partner agreement for services
Commercial services and support	<ul style="list-style-type: none"> • City provides curbside collection to limited number of commercial customers, utilizing the same resources as residential services 	<ul style="list-style-type: none"> • Eight cities provide limited commercial support • Similar to Austin; collection for a small number of commercial customers • Minimal shared administrative support • A few cities' with low residential rates subsidize residential services through commercial rates
Maintenance operations	<ul style="list-style-type: none"> • Fleet maintenance and fuel surcharges (electric infrastructure surcharge) are expensed where the equipment is utilized and thus included in the cost of service 	<ul style="list-style-type: none"> • Six benchmark cities provide fleet maintenance support

9.0 ORGANIZATIONAL STRUCTURE

The benchmarking study considered cities having both publicly and privately provided residential solid waste services. Seven cities, including Austin, have solid waste systems in which collection services are provided by the City primarily through city personnel and equipment. Nine cities provide solid waste services to residents through contracts with a single private hauler. For commercial customers, two cities (Denton and New Braunfels) have publicly-provided solid waste services and all other cities have either an exclusive franchise³ or an open franchise system.⁴

³An exclusive franchise system is one in which the City enters into a contract with a single hauler for specified services, and that hauler has the exclusive right to provide those services within the City limits. No other hauler may operate within the City limits for the specified services (typically residential and/or commercial).

⁴An open franchise system is one in which the City enters into agreements with multiple haulers, and each of those haulers has the right to provide services within the City limits. Under an open franchise system, the customer (residential or commercial) may choose which of the franchised haulers they receive services from.

For benchmark cities providing public residential solid waste services, Burns & McDonnell requested employment data including the number of full-time employees (FTEs) in solid waste operations, the median salary or those employees, and employee benefits as a percentage of median salary. For cities that were able to provide complete data, this allowed for analysis and comparison to ARR's employment data and the per-household monthly cost to the cities of solid waste employee salaries and benefits. Complete data is available for five large cities that provide collection services through City resources, presented in Table 3.

Table 3: Employee Salaries & Benefits and Cost per Household¹

City	FTEs	Median Employee Salary	Percent Benefits	Number of Households	Monthly Cost per Household of Salaries & Benefits
Austin	276	\$44,803	35%	200,550	\$6.94
Dallas	479	\$35,701	45%	245,000	\$8.43
El Paso	275	\$30,644	46%	180,000	\$5.70
New Braunfels	55	\$35,402	35%	28,900	\$7.58
San Antonio	619	\$38,924	42%	356,000	\$8.01

¹ The number of FTEs and median employee salary data utilized in this comparison reflect only FTEs directly involved in solid waste operations, including solid waste drivers/equipment operators, crew leaders, and supervisors.

Key Finding. Of these five cities, the average median solid waste employee salary is \$37,095. Austin's median salary is 21% higher than average, at \$44,803. However, Austin has a lower than average monthly cost per household of employee salaries and benefits at \$6.94, whereas the average is \$7.33. This metric is impacted the percentage of benefits each city provides (ranging from 35 to 46 percent) and by the number of households each city services.

Please reference Attachment C for complete organizational structure and employment data information benchmarked for each city.

10.0 AFFORDABILITY

A common measure of affordability for municipal utilities such as water and wastewater is to view annual utility costs as a percentage of the municipality's median household income. There is not a standard measure of affordability among municipal solid waste programs. Therefore, Burns & McDonnell applied this metric for the benchmark cities as a method of comparing the affordability of solid waste services. Among the benchmark cities, including Austin, the average annual cost of solid waste services as a percent of median household income is 0.42 percent. For Austin, that metric is 0.06 percent above the average, at 0.48 percent. Table 4 presents the median household income, annual cost of solid waste

services to each household (calculated as the monthly rate multiplied by 12 months), and annual solid waste costs as a percent of median household income. Figure 9 presents annual solid waste costs as a percent of median household income in graphical format.

Table 4: Solid Waste Affordability Metrics

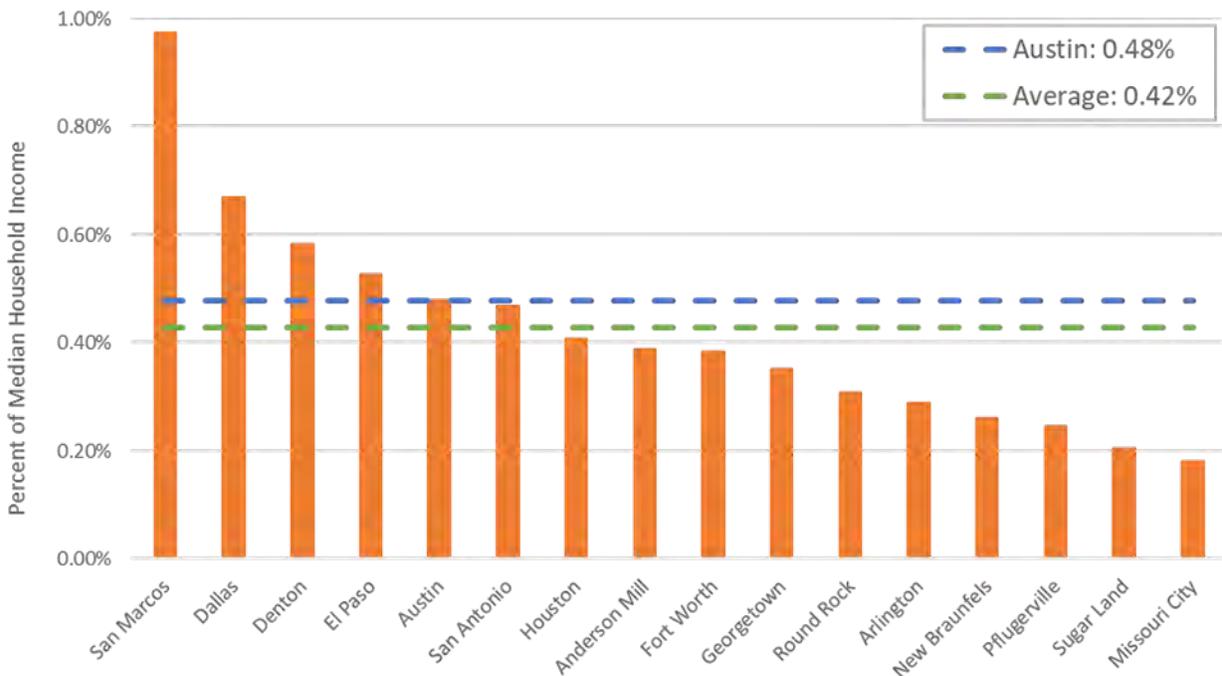
City	Median Household Income ¹	Annual Solid Waste Cost to Households ²	Percent Median Household Income
Austin	\$60,939	\$291.60	0.48%
Anderson Mill	\$57,000	\$221.52	0.39%
Arlington	\$53,574	\$154.56	0.29%
Dallas	\$45,215	\$302.16	0.67%
Denton	\$50,487	\$294.12	0.58%
El Paso	\$43,322	\$228.00	0.53%
Fort Worth	\$54,876	\$210.00	0.38%
Georgetown	\$64,256	\$225.60	0.35%
Houston ³	\$47,010	\$191.79	0.41%
Missouri City	\$88,591	\$159.12	0.18%
New Braunfels	\$61,618	\$160.80	0.26%
Pflugerville	\$77,899	\$190.80	0.24%
Round Rock	\$74,087	\$227.52	0.31%
San Antonio	\$48,183	\$225.12	0.47%
San Marcos	\$30,985	\$301.92	0.97%
Sugar Land	\$108,504	\$221.40	0.20%

¹ Sources for median household income: Anderson Mill – Anderson Mill is a Limited District within the City of Austin. Median Household Income was provided by Anderson Mill; All other cities – U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.

² This number is calculated as the monthly residential rate multiplied by 12 months per year. It is the total annual amount billed to each household for regular solid waste services.

³ Houston's Solid Waste Management Department (SWMD) is funded through the general fund and residents do not pay monthly service rates for solid waste services. The Annual Solid Waste Cost to Households column is instead the annual cost per household to the City of Houston for departmental operations. This number was calculated by dividing the SWMD's adopted total maintenance and operations (M&O) budget for FY 2018 by the City's 390,400 households. Source: <https://www.houstontx.gov/budget/18budadopt/index.html>

The average annual cost of solid waste services to each household is the cost each household pays to receive the services their city chooses to provide. The range of services varies among cities (refer to Figure 4 and Figure 5 for services provided by the solid waste monthly rate). Among benchmark cities, the average annual cost of solid waste services to each household is \$225.38. Though Austin is above average at \$291.60 annually, the City provides more services than other cities, has established high recycling goals, and has made the policy decision to implement a PAYT rate structure to work toward achieving those goals.

Figure 9: Annual Residential Solid Waste Rates as a Percent of Median Household Income

1. Houston's Solid Waste Management Department (SWMD) is funded through the general fund and residents do not pay monthly service rates for solid waste services. The percent of median household income is based on the data and sources provided in Table 4.

11.0 NON-SOLID WASTE IMPACTS TO RATES

The City of Austin has several citywide policies or requirements that ARR must follow. These policies and requirements impact total operational costs for ARR and thus impact customer rates as well. These include:

- Living Wage Requirements
- Paternal Leave Policies
- Insurance availability for temporary employees
- Austin Energy Green Choice program participation
- Fuel surcharge to fund electric charging stations
- Cost to administer open records program
- Art in public places expenses for CIP Projects

Only three of the 15 benchmark cities reported having similar citywide policies or requirements that impact solid waste department budgets and therefore impact residential customer rates. The similar policies or requirements reported by other cities included:

- Minimum wage floor requirements for solid waste contractors
- Requirement to maintain a certain percentage of reserve balance
- Annual funds transfers from solid waste department to support fleet maintenance, street maintenance, environmental clean-up, and general fund administration

12.0 POTENTIAL RATE INCREASE METRICS

Potential metrics that the City may consider using as the basis for future residential solid waste rate increases include:

Cost of service. Rate increases based on the cost of service are commonly used among cities for both publicly-provided services and privately-provided (contracted) services. The following summarizes rate increase metrics for both types of approaches to provide services:

- **Publicly-provided services.** A city evaluates the costs for services in a typical year and develops a multi-year cost of service forecast. Based on the cost of service, rate increases may be set annually or as needed (e.g. one increase that is designed to be in place for three years), which is often a City Council preference. Cities may choose to conduct a formal cost of service study with internal resources or utilizing a consultant.
- **Privately-provided services.** Cities that contract for solid waste services typically include contract terms regarding allowable metrics for rate increases by the contractor. Examples may include contract terms allowing annual rate increases based on the Consumer Price Index (CPI) and/or fuel prices, an annual fixed percent rate increase, or allowance for the contractor to ask for rate increases as they determine is necessary where the City has the authority to approve or reject such requests. While this approach is most common for cities with privately-provided services, a few cities have considered this type of approach to increasing rates in communities where the city is the service provider.

Adopted policy. Adopted city policies may drive the timing and amount of residential solid waste rate increases. For example, in Austin and other cities that have adopted PAYT residential rate policies, this can drive decisions about rate increases. The intent of the policy is to incentivize increased recycling percentages, which may be accomplished by increasing price differentials between small and large cart sizes. PAYT policies are typically adopted by cities with established recycling goals.

13.0 POTENTIAL COST REDUCTION OPTIONS

In collaboration with ARR staff, Burns & McDonnell developed options that may be implemented by ARR and the City to potentially reduce costs of providing solid waste services. The options were developed through the benchmarking process and known operations and strategies of other cities. The options, presented in Table 5, are intended only to communicate potential cost reduction strategies that the City may decide to further consider and are not meant to present recommendations for action. In-depth evaluations of these options specific to Austin have not been conducted. Burns & McDonnell recommends that the City conduct thorough evaluations for the feasibility and impacts of each option it may want to further consider.

Table 5: Potential Cost Reduction Options

Potential Option	Current State for Austin	Potential Applicability
Reduce collection frequencies	Refuse: weekly	Possibly: current frequency is industry best practice, but the City could consider every other week collection
	Recycling: every other week	Unlikely: reduced frequency would be inadequate
	Brush/bulky: twice per year	Yes: City is currently conducting pilot for call-in service
	Curbside compostables: weekly	Unlikely: current frequency is industry best practice with inclusion of food scraps
Procure or develop local processing and disposal options	Landfill: long distance from some areas of City	Possibly: closer landfill or multiple options may reduce hauling costs
	Transfer station: City does not utilize a transfer station	Possibly: use of transfer station may reduce hauling costs
	MRF¹: currently have local processing contracts in place	Unlikely: no significant benefit
Reduce support of non-solid waste services/programs	ARR funds multiple programs that are typically funded by other departments in benchmark cities	Possibly: Operational/financial support by other departments may reduce annual costs for ARR; requires City Council direction and costs would be absorbed by the General Fund
City Council policies	City of Austin requires multiple programs that are not required by other cities. (e.g., living wage, insurance for temp. employees, green energy requirement, etc.)	ARR will need direction from City Council
Enter Commercial collections operations	The City provides residential and cart-based commercial services only	Unlikely: While City would see substantial pushback from private haulers, providing commercial services provides the option to spread costs over more operations and potential for commercial rates to support residential services

¹ Materials processing facility (MRF)

Attachment A

RESOLUTION NO. 20180201-068

WHEREAS, the City of Austin owns and operates three municipal utilities: Austin Energy, Austin Water, and Austin Resource Recovery; and

WHEREAS, according to the Fiscal Year 2017/18 Taxpayer Impact Statement, the services provided by those three utilities will cost the average Austin resident approximately \$2,475; and

WHEREAS, in 2010, the City of Austin, by benchmarking residential, commercial, and industrial electric bills across the State, was able to calculate how affordable utility bills were when compared to other cities; and

WHEREAS, through that analysis, the City Council adopted Austin Energy's Affordability Goals which set a goal for Austin Energy to keep rates in the lowest 50% of Texas utilities and limit annual rate increases to no more than two percent for any customer class; and

WHEREAS, those Affordability Goals have been utilized when considering annual budgets as well as when deciding to make long-term investments for the utility; and

WHEREAS, given the differences in the energy, water, and solid waste markets and the differences in services and other factors between utilities in different cities, the goals may be different for each utility; and

WHEREAS, the City of Austin is committed to protecting the long-term viability and competitiveness of all of its municipally-owned utilities as well as ensuring affordable utility bills for all customers; and

WHEREAS, affordable utility bills are a critical part of all resident's personal monthly budgets and are an impactful piece of managing the rising cost of living in Austin; and

WHEREAS, the City of Austin has not established Affordability Goals or other standards for Austin Water or Austin Resource Recovery; and

WHEREAS, it is in the public's interest for the City to establish Affordability Goals for Austin Water and Austin Resource Recovery; **NOW, THEREFORE**,

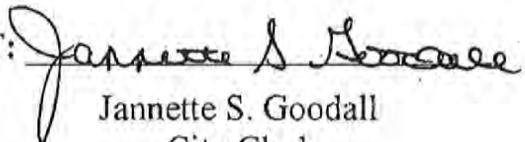
BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

The City Council directs the City Manager to provide information about internal benchmarks that the City of Austin's utilities conduct when assessing affordability and sustainability of the utilities' services to customers. The City Manager is directed to conduct a comprehensive, data-driven benchmarking study of public, and where available private, water and solid waste utilities in Texas that includes contextual information, where useful, such as efforts relating to sustainability, zero waster commitments, landfill diversion goals, conservation and drought mitigation efforts, the value of water, the source of water, purity standards, climate, and other components the City Manager deems appropriate.

Utilizing the findings of this review, the City Manager shall make recommendations for how to continue the utilities' evaluations with regard to affordability, as well as strategies for effectively communicating these ongoing efforts to customers, and how affordability goals may be reasonably determined, applied, tracked, and disclosed.

ADOPTED: February 1, 2018

ATTEST:



Jannette S. Goodall
City Clerk

ECONOMICS AND CORE SERVICES								
	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Service Provider								
Residential	City	Private - Central Trash & Recycling	Private - Republic Services	City	City	City	Private - Waste Management (Knight Waste Services is a subcontractor). City Staff manages services and provides some targeted operational programs (drop off stations, illegal dumping cleanup, etc.)	Private - Texas Disposal Systems
Commercial	Open Franchise	N/A	Exclusive franchise - Republic Services	Open Franchise	City	Open Franchise	Open Franchise	Exclusive franchise - Texas Disposal Systems
Department Name (Department responsible for solid waste services and/or contract management)	Austin Resource Recovery (ARR)	No solid waste department. Anderson Mill Limited District (District) is a special district within the City of Austin. Residents are also residents of Austin. Residents are eligible to receive many services provided by the City of Austin. There are few additional services provided by the District itself.	Solid Waste & Recycling	Sanitation Department	Solid Waste and Recycling Department	Environmental Services Department	Code Compliance Department - Solid Waste Services Area Command	Environmental Services Department
CITY SOLID WASTE GOALS								
Sustainability goals								
Does the City have any recycling, diversion, or sustainability goals?	20% reduction in per capita solid waste disposal by 2012 75% diversion by 2020 90% diversion by 2040	No, Anderson Mill is part of the City of Austin.	None currently. The City established a Solid Waste Management Plan that is reviewed and updated every 10 years.	2020: 40% diversion 2030: 60% diversion 2040: Zero Waste In the City's 2013 Solid Waste Management Plan, waste minimization, recycling, and waste diversion were established as priorities for the City.	Per capita recycling goal of 735 pounds per year by 2020; the City's 2030 comprehensive plan identified a Solid Waste and Recycling goal to work toward waste minimization, material reuse, and maximum material recovery.	86% recycling participation by 2021; 10% reduction in recycling contamination rate year-over year by 2021.	2021: Increase residential recycling rate to 30% 2023: Recycle 40% of all waste by weight generated in the City (residential and commercial) 2030: Recycle 50% of all waste by weight 2037: Achieve 60% diversion from landfill through recycling, reuse, waste reduction and waste to energy 2045: achieve 80% diversion	None currently. The City is in the process of developing a Comprehensive Solid Waste Master Plan, including development of solid waste management goals over the next 20 years.
Zero Waste goals								
Does this include Zero Waste goals?	Yes	No	No	Yes	No	No	No	No
CURRENT DIVERSION								
Current residential waste diversion								
What is the City's current (actual or estimated) residential recycling percentage?	38%	Unavailable; Anderson Mill is part of the City of Austin.	23%	19.4%	33%	14.5%	19.3%	20.2%
ADDITIONAL ECONOMIC INFORMATION								
Median household income (Source: ACS)	\$60,939	\$57,000 (Anderson Mill is a Limited District within the City of Austin. Median Household Income was provided by the District.)	\$53,574	\$45,215	\$50,487	\$43,322	\$54,876	\$64,256
Residential population (number) (Source: ACS)	950,715	10,000	396,394	1,341,075	136,268	683,577	874,168	70,685
Single-family residential solid waste customers (households) (Source: ACS & cities)	200,550	2,800	93,700	245,000	33,246	180,000	225,049	21,500
Number of solid waste employees								
How many employees are in the Solid Waste department?	462	Zero. The District does not have a solid waste department.	2	479	123	275	116	1
Does that number include any traditionally external resources that are housed within the Solid waste department? (Ex: HR employees in SW, rather than centralized?)	There are 462 regular full-time employee positions within ARR. This includes administrative support functions such as HR, Finance, Safety, Quality Assurance, Public Information/Business Outreach and Ordinance Development, and Customer Service. However, 276 of those FTEs are directly involved in solid waste collection operations (including drivers/equipment operators, crew leaders, and supervisors).	N/A	No	No	Yes	No. 275 employees directly involved in solid waste services. There are 391 total ESD employees, including HR and PIO, which are shared by the whole department.	Yes. This includes FTEs and partial FTEs for other employees funded out of Solid Waste account.	No
Details						275 includes landfill, collections, recycling, transfer station drivers, and managers. It excludes co-compliance. 391 total in the Environmental Services Department, including co-compliance.		There is an ESD director and the department is supported by other City departments as needed.
Employee benefits								
Median solid waste employee annual salary (see Texas Tribune source)	\$44,803	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.	\$35,701	\$54,058	\$30,644	\$48,096	N/A. Services are provided by a contracted hauler.
Details	The median salary figure includes only those 276 FTEs directly involved in solid waste collection operations.				Includes management and administrative staff	Includes the 275 direct solid waste employees	Includes all solid waste employees including operations, management, and support.	
Estimated percent of overall employee salary?	35% of base salary, including employer aid expenses such as FICA, benefits, etc.	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.	45% of base salary	Not reported	46% of base salary	Not reported	N/A. Services are provided by a contracted hauler.

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
FUNDING SOURCE(S)								
Residential Monthly Rates								
Does the City have a pay-as-you-throw rate system?	Yes	No	No	No	Yes	No	Yes	No
Monthly Rates (do not include tax)	24-gallon: \$17.90 32-gallon: \$19.15 64-gallon: \$24.30 96-gallon: \$42.85	96-gallon: \$18.46	Bag-based (no cart): \$13.80	\$25.18	65-gallon: \$24.51 95-gallon: \$29.26	\$19.00	32-gallon: \$12.50 64-gallon: \$17.50 95-gallon: \$22.75	96-gallon: \$18.80
Additional monthly solid-waste related fees (e.g., admin, public education, etc.)	None	None	None	None	None	Additional \$4.00 per month franchise fee	None	None
Additional Notes	Each rate above includes a base fee of \$14.05 plus a per-gallon fee of \$0.16 for 64-gallon carts or smaller and \$0.30 per gallon for 96-gallon carts.	Residents are billed quarterly (\$59.98 per quarter).						
Environmental fees and other funding sources								
Are there funding sources for residential solid waste services other than monthly residential rates (other than additional fees associated with specific curbside services)?	Yes	No	No	No	No	Yes.	Yes	No
If so, please briefly describe.	The revenue share received from the single-stream recycling program is used to offset some of the expense involved. Also, customers are charged for extra services (extra trash charges for bags left outside of or that overflow the cart). The recycling revenue share and extra stickers revenue make up approximately 3% of the overall budgeted revenue for the department for FY19.	N/A	N/A	N/A	N/A	Environmental Fee, see below	Royalties from the landfill and sale of recyclable materials	N/A
Do residents pay any other fees to the City (such as an "Environmental Fee" or "Clean Community Fee")?	Clean Community fee, \$8.95 per month	No	No	No	No	Environmental Fee, \$5.00 per month	Environmental Protection Fee, \$0.50 per month	Stormwater Drainage Fee, \$6.50 per month
If so, does the fee help fund residential solid waste services?	Yes	N/A	N/A	N/A	N/A	No	No	No
What does the fee fund for the City?	This fee funds citywide street sweeping, dead animal collection, litter control, Brownfields remediation, recycling economic development, the resource recovery center and household hazardous waste facility, the Clean Austin program, and landfill closure and post closure care.	N/A	N/A	N/A	N/A	The Environmental Fee is allocated 50% to the Environmental Services department and 50% to other City department. It funds many environmental-related services, including, but not limited to: General Fund Administrative Services, City Facility Maintenance, Graffiti Abatement, Street Sweeping, Tree Farm, Alley Cleaning /Street Maintenance, Parks Litter Control, DMD Interlocal Sanitation Services, City Facilities Trash Disposal Contract, Env Code Compliance.	Funds the City's Air, Stormwater, Land & Litter compliance programs; funds 30-40% of the HHW Environmental Collection Center.	Stormwater infrastructure development and maintenance
CORE RESIDENTIAL SERVICES								
Refuse								
Refuse cart size(s) available	24-, 32-, 64-, 96-gallon with PAYT rate structure	96-gallon	N/A; bag-based refuse collection	96-gallon standard; 48-, 64-gallon upon request	65-, 95-gallon with PAYT rate structure	96-gallon	32-, 64-, 96-gallon with PAYT rate structure	96-gallon standard; 35-, 65-gallon upon request
Manual, automated, or semi-automated?	Automated	Automated	Manual	Automated	Automated	Automated	Automated	Automated
Collection frequency	Weekly	Weekly	Twice per week	Weekly	Weekly	Weekly	Weekly	Weekly
Additional fees (if applicable)	Bag tags may be purchased for \$4.00 per tag for additional material.	None	None	\$10.56 per month per additional cart	\$17.38 per month per additional large cart; \$7.00 per cart reload & empty for out-of-cart material.	\$19.00 per month per additional cart	"Pay Bags" (bag tags) may be purchased at a rate of \$15.00 per 5 bags for additional material.	\$9.00 per month per additional cart; bag tags may be purchased for \$5.00 per tag for additional material.
Extra refuse - outside of cart								
Does City or contractor collect refuse material outside of cart?	Provided for additional fee	Not provided	N/A (bag-based collection); refuse collection includes household waste placed in non-reusable containers AND up to 1 cubic yard of bulky materials not bagged.	Not provided	Provided for additional fee	Provided for additional fee	Provided for additional fee	Provided for additional fee
If yes, is service provided in monthly rate? Or for additional fee, other funding, etc.?	An additional fees for this service are approved by City Council.	N/A	N/A	N/A	\$7.00 per cart reload and empty for out-of-cart refuse	One "extra lift" by refuse collection vehicle will be provided for an additional \$4.50 per collection.	"Pay Bags" (bag tags) may be purchased at a rate of \$15.00 per 5 bags for additional material.	Bag tags may be purchased for \$5.00 per tag for additional material.
Extra refuse - additional scheduled collections								
Does City or contractor provide extra trips for refuse pick-ups at a customer's request?	Provided for additional fee	Provided for additional fee	Not provided	Not provided	Not provided	Provided for additional fee	Not provided	Not provided
Additional fees (if applicable)	An additional fee for this service is approved by City Council.	Not reported	N/A	N/A	N/A	Additional fee of \$10.00 per request.	N/A	N/A

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Curbside Recycling								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate
Recycling cart size(s) available	64-, 96-gallon	96-gallon	65-gallon	96-gallon standard; 48-, 64-gallon upon request	65-gallon standard; 95-gallon upon request	96-gallon	64- or 96-gallon	95-gallon standard; 35-, 65-gallon upon request
Manual, automated, or semi-automated?	Automated	Automated	Automated	Automated	Automated	Automated	Automated	Automated
Collection frequency	Every other week	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Every other week
Additional fees (if applicable)	None. Extra recyclables are collected free of charge in a cardboard box or other reusable container. Residents may request an additional recycling cart at no cost.	None	None	None	None; additional carts available at not cost	None; limit of one cart per household	Additional fees may be assessed by Enforcement for recycling contamination.	\$9.00 per month per additional cart; boxed recyclables outside of cart are accepted at no additional cost.
Curbside Bulk collection								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided with monthly rate	Provided with monthly rate	Combined with regular refuse (monthly rate)	Provided with monthly rate	Provided with monthly rate	Additional fee	Provided with monthly rate	Provided with monthly rate
Frequency	Twice per year	Monthly	Not provided separately, combined with regular refuse	Monthly	Four times per year, upon request	Unlimited, upon request	Monthly	Two times per year, upon request
Materials accepted	Doors, carpet, furniture, appliances (remove doors), passenger car tires (remove rims; limit eight tires per household), lawn mowers (remove gas/oil), railroad ties (cut in half), pallets, rolled fencing, nail-free lumber.	Large items such as large appliances, furniture, mattresses; bagged leaves and bundled branches; up to three cubic yards or 20 bags/bundles per collection; C&D material not accepted	Furniture, large appliances, carpet, and fencing, up to one cubic yard per collection; bundled tree limbs and brush, up to one cubic yard per collection.	Furniture, appliances, carpet, mattresses, other bulky items	Household items, appliances, remodeling debris	Bulky items, brush and other yard waste	Large, bulky items too large for the cart or normal refuse collection; limit of 10 CY per collection	Furniture, mattresses, toilets, large appliances; not intended for brush and yard trimmings; limit of 3 CY per collection.
Additional fees	Additional collections are available for \$120.00 for two items.	None	None	City provides on-demand collection for construction or remodeling materials for an additional fee.	4 large household items per year are included in monthly rate service; appliances and electronics are \$20.00 each; remodeling debris is \$25.00 for 4 CY maximum.	\$35 for collection of five CY or less, \$7 for each additional CY, plus tax. Typically, special collections include a mix of material types (e.g., bulk and brush).	Additional charge for material exceeding 10 CY; \$75 for first excess 5 cubic yards and \$65 for every additional 5 cubic yards.	Additional collections or out-of-city customer collections provided upon request for \$28.00 per CY.
Curbside Brush collection								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided with monthly rate	Combined with bulk (monthly rate)	Combined with regular refuse (monthly rate)	Combined with bulk (monthly rate)	Provided with monthly rate	Combined with bulk (additional fee)	Combined with yard trimmings (monthly rate)	Combined with yard trimmings (monthly rate)
Frequency	Twice per year	Combined with bulk	Not provided separately, combined with regular refuse	Combined with bulk	Weekly	Combined with bulk	Combined with yard trimmings	Combined with yard trimmings
Materials accepted	Brush, tree trunks cut and stacked per City guidelines	Large items such as large appliances, furniture, mattresses; bagged leaves and bundled branches; up to three cubic yards or 20 bags/bundles per collection	Bundled tree limbs and brush, up to one cubic yard per collection	Tree limbs, shrubbery, bagged leaves	Bagged grass clippings and leaves, brush, limbs, and other yard waste, up to 4 CY per collection	Collections include bulky items, brush and other yard waste.	Leaves, grass clippings, small trimmings, shrub and tree trimmings, stacked or bundled brush	Yard trimmings and bundled brush, up to 20 bags, containers, or bundles accepted per collection; food scraps not accepted
Is material composted, mulched, otherwise diverted, or landfilled?	Composted	Landfilled currently. The District is in the process of arranging for brush/yard waste material to be diverted, with anticipated start date of 4-6 months from now (late August 2018).	Landfilled	Some is diverted, but loads mixed with bulk waste are landfilled.	Composted into Dyno Dirt	Material is not composted; some clean brush is mulched; if brush is mixed with other materials (bulky waste) it is landfilled.	Mulched	Mulched at the City's Collection Station (Transfer Station)
Additional fees	Additional collections are available for \$100.00 for up to a 15-foot high, 4-foot long brush stack.	None	None	City provides on-demand collection for brush for an additional fee.	\$7.00 per each excess cubic yard	\$35 for collection of five CY or less, \$7 for each additional CY, plus tax. Typically, special collections include a mix of material types (e.g., bulk and brush).	None	Additional items are collected if tagged with bag tag purchased for \$5.00 each.
Curbside Yard Trimmings (no food scraps)								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided with monthly rate	Combined with bulk (monthly rate)	Combined with regular refuse (monthly rate)	Combined with bulk (monthly rate)	Combined with brush (monthly rate)	Combined with bulk (additional fee)	Provided with monthly rate	Provided with monthly rate
Frequency	Weekly	Combined with bulk	Not provided separately, combined with regular refuse	Combined with bulk	Combined with brush	Combined with bulk	Weekly	Monthly
Materials accepted	Grass clippings, leaves, small branches or limbs no longer the 5 feet and 3 inches in diameter	Large items such as large appliances, furniture, mattresses; bagged leaves and bundled branches; up to three cubic yards or 20 bags/bundles per collection	Bagged leaves, up to one cubic yard per collection; bundled brush; grass clippings are not accepted curbside.	Bagged leaves	Bagged grass clippings and leaves, brush, limbs, and other yard waste, up to 4 CY per collection	Collections include bulky items, brush and other yard waste.	Leaves, grass clippings, small trimmings, shrub and tree trimmings, stacked or bundled brush	Yard trimmings and bundled brush, up to 20 bags, containers, or bundles accepted per collection; food scraps not accepted
Is material composted, mulched, otherwise diverted, or landfilled?	Composted	Landfilled currently. The District is in the process of arranging for brush/yard waste material to be diverted, with anticipated start date of 4-6 months from now (late August 2018).	When placed curbside material is landfilled.	Some is diverted, but loads mixed with bulk waste are landfilled.	Composted into Dyno Dirt	Landfilled	Mulched	Mulched at the City's Collection Station (Transfer Station)
Cart collection or bagged/bundled?	Cart and/or Kraft paper bags or reusable container	Bagged/bundled	Bagged or bundled	Bagged/bundled	Bagged/bundled	Set-out	Optional cart, may also be bagged or bundled	Kraft bags or personal containers
Additional fees	None	None	No separate yard trimmings collection; City provides leaf recycling drop-off sites.	No	\$7.00 per each excess cubic yard	\$35 for collection of five CY or less, \$7 for each additional CY, plus tax. Typically, special collections include a mix of material types (e.g., bulk and brush).	None (however residents can purchase a yard cart for a one time fee of \$75 and there is no weekly charge for collection).	Additional items are collected if tagged with bag tag purchased for \$5.00 each.

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Curbside Organics collection (Composting, including food scraps)								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided with monthly rate	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Frequency	Weekly	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organics cart sizes available	32-, 96-gallon	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Materials Collected (please specifically indicate if food scraps are accepted)	Food scraps, yard trimmings, food soiled paper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional fees	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ECONOMICS AND CORE SERVICES								
	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
Service Provider								
Residential	City	Private - WCA Waste Corp	City	Private - Waste Connections	Private - Round Rock Refuse	City	Private - Texas Disposal Systems	Private - Republic Services
Commercial	Open Franchise	Exclusive franchise - WCA Waste Corp	City	Exclusive franchise - Waste Connections	Exclusive franchise - Round Rock Refuse for commercial refuse. Commercial recycling is open franchise.	Open Franchise	Exclusive franchise - Texas Disposal Systems	Exclusive franchise - Republic Services
Department Name (Department responsible for solid waste services and/or contract management)	Solid Waste Management Department (SWMD)	Municipal Solid Waste Program	Solid Waste and Recycling Division	Utility Billing, Trash & Recycling	Environmental Services	Solid Waste Management Department	Neighborhood Services Department, Resource Recovery	Environmental & Neighborhood Services, Solid Waste & Recycling
CITY SOLID WASTE GOALS								
Sustainability goals								
Does the City have any recycling, diversion, or sustainability goals?	None currently. City continuously seeks ways to increase diversion through programs provided to residents (e.g., curbside recycling, drop-off centers, concrete recycling). The City will begin developing a long-range solid waste plan in the near future, which will likely include establishing waste diversion goals.	None currently. The City is actively working to increase participation in its recycling program.	None currently. The City is currently working on a 20-year solid waste management plan, including addressing waste diversion, reduction, and recycling goals.	None currently. The City tries to divert as much material as possible through its recycling service.	No	60% recycling/diversion rate for single-family residential waste by 2025; Ensure all single- and multifamily residents have access to recycling; improve recycling opportunities for businesses.	2013: 65% residential recycling participation 2015: 75% residential recycling participation, 75% green waste diversion 2030: 100% residential recycling participation; 100% green waste diversion The City has also established the goal to increase waste reduction/diversion and has set varying goals by waste type and sector. There is no specific diversion goal for residential recycling.	40% diversion rate for residential
Zero Waste goals								
Does this include Zero Waste goals?	No	No	No	No	N/A	Yes, the City has set the goal to ultimately become a zero waste community through a change in culture to view discarded materials as resources, and meeting the goals stated above.	No	No
CURRENT DIVERSION								
Current residential waste diversion								
What is the City's current (actual or estimated) residential recycling percentage?	28%	Not reported.	15.8%	Unknown	15%, based on 5 months of data available on the City's website (March-July 2018) https://www.roundrocktexas.gov/departments/utilities-and-environmental-services/solid-waste-recycling/	32.6%	30%	37%
ADDITIONAL ECONOMIC INFORMATION								
Median household income (Source: ACS)	\$47,010 (ACS)	\$88,591	\$61,618	\$77,899	\$74,087	\$48,183	\$30,985	\$108,504
Residential population (number) (Source: ACS)	2,312,717	74,497	79,152	63,359	123,678	1,511,946	63,071	117,869
Single-family residential solid waste customers (households) (Source: ACS & cities)	390,435	23,400	28,900	23,299	Not reported	356,000	92,000	39,964
Number of solid waste employees								
How many employees are in the Solid Waste department?	472	0	55	0	Equivalent of 4 FTEs	619	3 FTEs, 6 part-time interns	4
Does that number include any traditionally external resources that are housed within the Solid waste department? (Ex: HR employees in SW, rather than centralized?)	Approximately 80-85% of the SWMD employees are involved in service operations (City has four service quadrants). The remaining 15-20% include employees in accounts payable, purchasing, public information, community outreach, GIS, and other functions that support the department.	N/A	No	N/A	Approximate equivalent of four full time employees perform solid waste responsibilities: 1 FTE in parks for Downtown monitoring; 2.5 FTEs for the recycling drop off center, monthly HHW collection, and some public space and City facility recycling; 0.5 FTE from the Environmental Department provides additional support for solid waste.	No. 619 includes only those in solid waste operations. The department total is 725 employees, including 5-10 for HR, purchasing, risk management, and safety and about 100 for fleet maintenance.	No	No
Details		There are no dedicated solid waste employees.	55 total includes admin, residential, recycle/green waste, commercial, container maintenance, and fleet services	There are no dedicated solid waste employees.		619 in solid waste operations. 725 solid waste total in SWMD, including providing fleet maintenance for the entire city.	The role of City solid waste employees (Neighborhood Services) is to execute contracts, implement the master plan, resolve customer issues, provide education and outreach, etc.	
Employee benefits								
Median solid waste employee annual salary (see Texas Tribune source) Details	Not reported.	N/A. Services are provided by a contracted hauler.	\$35,402	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.	\$38,924 (average for Side Load Equipment Operator)	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.
Estimated percent of overall employee salary?	33% of base salary	N/A. Services are provided by a contracted hauler.	35% of base salary	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.	42% of base salary	N/A. Services are provided by a contracted hauler.	N/A. Services are provided by a contracted hauler.

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
FUNDING SOURCE(S)								
Residential Monthly Rates								
Does the City have a pay-as-you-throw rate system?	N/A	No	No	No	No	Yes	Yes	No
Monthly Rates (do not include tax)	None; funded by the General Fund through property taxes	96-gallon: \$13.26	96-gallon: \$13.40	96-gallon: \$15.90	\$18.96 (plus 8.25% tax)	48-gallon: \$16.76 64-gallon: \$18.76 96-gallon: \$26.76	65-gallon: \$25.16 96-gallon: \$28.16	96-gallon: \$18.45
Additional monthly solid-waste related fees (e.g., admin, public education, etc.)	None	Additional \$1.50 per month administrative fee	None	None	None	None	None	
Additional Notes							Rates paid by residents include a large portion that goes to TDS, portion to Green Guy Recycling for drop-off, and portion to the City for administration, education, and other support.	
Environmental fees and other funding sources								
Are there funding sources for residential solid waste services other than monthly residential rates (other than additional fees associated with specific curbside services)?	N/A (no rates, services are funded by General Fund)	No	No	No	Not reported	Yes, funding for SW Operations (FY18) comes from the following:	No	No
If so, please briefly describe.	Some revenue is generated and retained from sale of recyclables but is an insignificant portion of the solid waste budget.	N/A	N/A	N/A	Not reported	For FY2018, the breakdown for solid waste funding is as follows: Monthly rates 80.20%, Environmental Fee 13.49%, Recycling Program revenues - 3.47%, Brush Recycling Fee - 0.89%, Waste Hauler Permit Fee - 0.90%, Miscellaneous Revenue - 0.83%.	N/A	N/A
Do residents pay any other fees to the City (such as an "Environmental Fee" or "Clean Community Fee")?	No	No	No	No	Not reported	Environmental Fee, \$2.24 per month; in addition to the monthly rates stated above, residents also pay a monthly Environmental Fee of \$2.24, described below.	Community Enhancement Fee, \$1.50 per month for residential customers and \$5.50 per month for commercial customers.	No
If so, does the fee help fund residential solid waste services?	N/A	N/A	N/A	N/A	Not reported	Yes, the Environmental Fee is full allocated to the Solid Waste Management Department.	No	N/A
What does the fee fund for the City?	N/A	N/A	N/A	N/A	Not reported	Offsets costs for illegal dumping clean-up, dead animal collection and disposal, regulatory maintenance for closed landfills, and other equitable costs sharing activities benefiting residents and businesses; also funds HHW and brush and bulk drop-off facilities and the City's Office of Sustainability (sister department to Solid Waste).	Funds items such as litter clean-up on major roadways, community beautification, public trash and recycling receptacles.	N/A
CORE RESIDENTIAL SERVICES								
Refuse								
Refuse cart size(s) available	96-gallon	96-gallon standard; 65-gallon upon request	96-gallon standard; 48-gallon upon request	95-gallon	96-gallon	48-, 64-, 96-gallon with PAYT rate structure	65-, 95-gallon with PAYT rate structure	95-gallon standard; 35-, 65-gallon upon request
Manual, automated, or semi-automated?	Automated	Automated	Automated	Automated	Cart-based, automated	Automated (10% semi-automated due to alley collection)	Automated	Automated
Collection frequency	Weekly	Twice per week	Weekly	Weekly	Weekly	Weekly	Weekly	Twice per week
Additional fees (if applicable)	\$17.27 (including sales tax) per month per additional cart; bag tags may be purchased for additional material \$2.28 per tag from participating retailers or \$5.00 each directly from the City.	\$75.00 per year per additional cart service; \$95.00 one-time fee for purchase of additional cart	\$6.50 per month per additional cart, plus one-time processing fee of \$10.00; bag tags may be purchased for \$2.00 per tag for additional material.	\$6.12 per month per additional cart	None; If requested, customers may receive an additional cart for no additional cost, though requests are uncommon	None	\$6.29 per month per additional cart; bag tags may be purchased for \$6.17 per tag for additional material	\$5.00 per month per additional cart
Extra refuse - outside of cart								
Does City or contractor collect refuse material outside of cart?	Provided for additional fee (no monthly rate)	Not provided	Provided for additional fee	Provided with monthly rate	Provided with monthly rate	Not provided	Provided for additional fee	Not provided
If yes, is service provided in monthly rate? Or for additional fee, other funding, etc.?	Bag tags may be purchased for additional material \$2.28 per tag from participating retailers or \$5.00 each directly from the City.	N/A	Bag tags may be purchased for \$2.00 per tag for additional material.	Provided as part of bulky collection (up to six large items) on same day as refuse	Provided with monthly rate. Customers may place up to seven additional items at the curb outside of the refuse cart on each refuse collection day. Materials accepted include additional household items and bagged or bundled brush and yard trimmings.	N/A	Bag tags may be purchased for \$6.17 per tag for additional material	N/A
Extra refuse - additional scheduled collections								
Does City or contractor provide extra trips for refuse pick-ups at a customer's request?	Not provided	Not provided	Provided for additional fee	Not provided	Not reported	Provided for additional fee	Provided with monthly rate	Provided for additional fee
Additional fees (if applicable)	N/A	N/A	Additional fee of \$15.00 per request	N/A	Not reported	Additional fee of \$10.00 per request	N/A	Additional fee of \$25.00 per request

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
Curbside Recycling								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Provided through General Fund (no monthly rates)	Provided with monthly rate	Provided but not with monthly rate; additional fee of \$4.26 per month	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate
Recycling cart size(s) available Manual, automated, or semi-automated?	96-gallon Automated	65-gallon standard, 95-gallon upon request Automated	96-gallon standard; 48-gallon upon request Automated	95-gallon Automated	96-gallon Cart-based, automated	48- or 96-gallon Automated (10% semi-automated due to alley collection)	96-gallon Automated	65-gal standard; 35-, 95-gallon upon request Automated (carts) and manual (bulk cardboard)
Collection frequency	Every other week	Every other week	Weekly	Every other week	Every other week	Weekly	Every other week	Once per week and on-call bulk cardboard collection
Additional fees (if applicable)	None	\$75.00 per year per additional cart service (65-gallon); \$95.00 one-time fee for purchase of additional cart	None	\$2.55 per month per additional cart	None; If requested, customers may receive an additional cart for no additional cost, though requests are uncommon	\$25.00 or \$50.00 contamination fee assessed dependent on level and type of contamination	None; extra boxed recyclables accepted at no additional cost	None; additional carts available at no cost
Curbside Bulk collection								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	General funded	Provided with monthly rate	Additional fee	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate	Provided with monthly rate
Frequency	Six times per year (every other month)	Every other week	Unlimited, upon request	Weekly	Once per year (Annual Spring Clean Up) included with monthly rate; additional bulky waste collections may be scheduled for a fee	Twice per year	Four times year, upon request	Monthly
Materials accepted	Tree waste (limbs, branches, stumps) and junk waste (bulky items, furniture, appliances) are collected in alternating months (Tree Waste and Junk Waste Program).	Large, bulky items such as furniture or large appliances; limit of 4 items or 5 CY per collection	Bulk and brush material	Furniture, large appliances, mattresses, bundled brush and limbs; up to six bulky items per collection	Annual Spring Clean up accepts large appliances, furniture, scrap metal, lumber, mattresses; brush is not accepted;; no tires, large tv Additional scheduled bulky collections accept excess large items and brush	Household appliances, scrap metal, carpeting, fencing, treated wood, furniture, mattresses, passenger car tires, televisions, toilets, wooden pallets, rigid plastics	Bundled brush, furniture, mattresses, large appliances, carpet; limit of 3 CY per collection (total of 12 CY annually)	Furniture, large appliances and other household items too large to fit in the refuse cart; does not include construction, demolition, or hazardous wastes.
Additional fees	None	None	\$25 minimum for 30 minutes then \$25 per 30 minutes after that to include travel if more than one load	None	Additional pick-ups may be specified as brush or non-brush; fees are \$25 plus \$1 for each minute over five minutes	Additional collections (brush and bulk) are available for \$50.00 up to 4 CY and additional \$25.00 for each additional 4 CY or portion thereof.	Additional fee of \$35 per CY for material exceeding service limits paid to contractor	Extra on-call bulky service is available for additional fees per collection; \$75.00 for five cubic yards or less.
Curbside Brush collection								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	General funded	Provided with monthly rate	Combined with bulk (additional fee)	Provided with monthly rate	Provided for additional fee. This is intended for times when a resident has brush material in excess of the 7-item additional set-out limit for collection on refuse days; City residents may also drop off up to 2 CY of brush at the Brush Recycling Center at no cost.	Provided with monthly rate	Combined with bulk (monthly rate)	Provided with monthly rate
Frequency	Six times per year (every other month)	Weekly	Combined with bulk	Every other week	Up to weekly, upon request	Two times per year	Combined with bulk	Weekly
Materials accepted	City collects tree waste (limbs, branches, stumps) and junk waste (bulky items, furniture, appliances) in alternating months (Tree Waste and Junk Waste Program).	Bundled brush	Bulk and brush material	Large volumes of brush and limbs	Brush (unbundled, no longer than 10 feet)	Brush (ex. shrubs, tree branches, woody vines), leaves; designed for large quantities	Same as bulky.	Grass clippings, leaves, brush, tree limbs, organic material from yard or garden (does not include food waste)
Is material composted, mulched, otherwise diverted, or landfilled?	Composted	Chipped and used as alternative daily cover at the landfill.	Material is diverted to Comal County Rural Recycling for mulching.	Diverted	Mulched	Mulched	Landfilled (collected with bulky material)	Materials are recycled into mulch or compost.
Additional fees	None	None	\$25 minimum for 30 minutes then \$25 per 30 minutes after that to include travel if more than one load.	None	Fee is \$25 per collection plus \$1 per minute over five minutes	Additional collections (for bulk and brush) are available upon request for additional fees: \$50 up to 4 CY, additional \$25 for each additional 4 CY or portion thereof.	Additional fee of \$35 per CY for material exceeding service limits paid to contractor	
Curbside Yard Trimmings (no food scraps)								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	General funded	Combined with brush (monthly rate)	Provided with monthly rate	Not provided (combined with refuse)	Provided with monthly rate; Customers may place up to seven additional items at the curb outside of the refuse cart on each refuse collection day, including bagged leaves, yard trimmings, and bundled brush	Provided with monthly rate	Not provided (material accepted with brush and organics)	Combined with brush (monthly rate)
Frequency	Weekly	Combined with brush	Weekly	Not provided separately, combined with regular refuse	Weekly	Two times per year (upon request)	Combined with organics	Combined with brush
Materials accepted	Grass clippings, small branches, leaves	Bagged or contained yard trimmings, bundled brush; 4 items or 5 CY per collection, with bulky waste	Bagged or bundled collection of grass clippings, garden trimmings, leaves, twigs; service does not include food scraps and not intended for large volumes of brush	N/A	Bundled brush, bagged leaves and other yard trimmings; Customers may place up to seven additional items at the curb outside of the refuse cart on each refuse collection day, including bagged leaves, yard trimmings, and bundled brush	Leaves only; leaves and yard waste are also accepted with regular organics collection, if the customer opts in to organics service	N/A	Grass clippings, leaves, brush, tree limbs, organic material from yard or garden (does not include food waste)
Is material composted, mulched, otherwise diverted, or landfilled?	Composted	Diverted (mulch, compost, or alternative daily cover)	Material is diverted to Comal County Rural Recycling for mulching.	N/A	Not reported	Leaves are recycled	N/A	Mulched or composted
Cart collection or bagged/bundled?	Material must be bagged in compostable bags and branches must be bundled.	Compostable bags, bundled, or customer-provided reusable container	Bagged or bundled	N/A		Bagged	N/A	Materials should be bagged separately, placed separate (customer-provided) reusable containers, or bundled
Additional fees	None	None	None	N/A	None	\$20 per collection after 2 free collections	N/A	Included in monthly rate

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
Curbside Organics collection (Composting, including food scraps)								
Provided with residential solid waste monthly rate, provided but not with monthly rate, or not provided?	Not provided	Not provided	Not provided	Not provided	Not provided.	Provided with monthly rate (opt-in service)	Provided with monthly rate (food scraps are not accepted)	Not provided
Frequency	N/A	N/A	N/A	N/A	N/A	Weekly (opt-in program)	Weekly (no meat/dairy)	N/A
Organics cart sizes available	N/A	N/A	N/A	N/A	N/A	48-, 96-gal	96-gal	N/A
Materials Collected (please specifically indicate if food scraps are accepted)	N/A	N/A	N/A	N/A	N/A	Leaves, grass, shrub and tree trimmings, food scraps, food-soiled paper	Yard trimmings, plant-based kitchen waste (fruit and vegetables; meat and dairy not accepted), soiled paper products, branches, coffee grounds, pet waste if not bagged	N/A
Additional fees	N/A	N/A	N/A	N/A	N/A	\$25 or \$50 contamination fee dependent on type of contamination	Extra material is collected in paper yard waste bags at no additional cost.	N/A

ADDITIONAL RESIDENTIAL CUSTOMER SERVICES									
	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	
Household Hazardous Waste (HHW)									
Does the City offer household hazardous waste (HHW) collection services or program? (e.g., curbside collection, permanent collection facility, periodic or mobile collection events, etc.)	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided or funded by the District. Residents are eligible to participate in the City of Austin HHW drop-off program through the City.	Solid Waste Department	Solid Waste Department	Solid Waste Department	Solid Waste Department (Environmental Services)	Solid Waste Department	Solid Waste Department
Is it funded through residential solid waste monthly rates?	No	N/A	No	Yes	Yes	Yes	No	Yes. The HHW program funding is part of the Environmental Services Department's (solid waste) annual budget development.	
If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	Storm Water Fees	N/A	N/A	N/A	30-40% of program funding is from the City's Environmental Fee (\$0.50/month for residents), which is partially allocated to the HHW program. 60-70% of funding comes from participant cities.	N/A	
Summary of Service	Austin and Travis County residents may drop off HHW material (up to 30 gallons annually) at the City's Recycle & Reuse Drop-off Center.	N/A	City participates in Fort Worth's regional HHW collection program. Residents may drop off material at Fort Worth's Environmental Collection Center (ECC) or monthly collection events at no charge.	The City participates in Dallas County's program, which offers periodic BOPA (batteries, oil, paint, antifreeze) mobile collection events and drop-off of traditional HHW at the County's permanent collection facility.	Residents receive on-call curbside collection	HHW may be dropped off at the City's five Citizens Collection Stations. The City contracts with vendors for the proper packaging, transport, an disposal of HHW materials.	The City operates four Drop-Off Stations that accept HHW and the Environmental Collection Center (permanent HHW collection facility) and a regional collection program with about 54 participating cities. The City also hosts about 75 mobile collection events per year. The facility has a HHW reuse store as well.	The City partners with Williamson County to provide residents with an on-line voucher program for drop-off of HHW material at the Williamson County Recycle Center. The City pays for 100% of voucher costs for in-City residents, and 50% of voucher costs for residents in the ETJ. The county pays for the second half of ETJ voucher costs.	
Textiles collection									
Does the City offer residents separate curbside collection of textiles?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR contracted through Simple Recycling	Not provided by District.	Not provided by City	Not provided by City	Not provided by City	Not provided by the City	Not provided by City	Not provided by City
Is it funded through residential solid waste monthly rates?	No, however there are no additional costs to the City to provide this service; see below.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
If not through residential monthly rates, please briefly describe how service is funded.	The current contract is a revenue generating contract with the minimal revenue received helping to offset the monthly rate.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Summary of Service	Residents receive curbside collection of clothing and housewares every other week on single-stream recycling collection days.	N/A	N/A	N/A	N/A	Donation bins for textiles are available at the City's Citizens Collection Stations (drop-off sites).	Textiles are included in accepted materials at the Drop Off Station Goodwill Partnership with Attended Donation Centers located within our four (4) DOS sites.	N/A	
Dead animal collection									
Does the City offer residents call-in collection of small dead animals, from public rights-of-way and homes? (does not include pets or livestock)	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Other District department - Parks and Recreation. Indicated that residents may also be eligible to receive services from the City of Austin. Whichever is called will provide the service.	Other City department - Animal Services	Solid Waste Department	Not provided by City	Solid Waste Department (Environmental Services)	Solid Waste Department	Other City department - Streets Department
Is it funded through residential solid waste monthly rates?	No	No	No	Yes	N/A	N/A	Yes, when the dead animal is collected from a public right of way.	Yes	No
If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	Through Parks and Recreation department budget.	Program is funded by the Animal Services Department.	N/A	N/A	If the dead animal is collected at a resident's home, the resident pays an additional fee based on the size of the animal	N/A	Not funded through solid waste monthly rates or other solid waste funding sources. Funded through other City department.	
Summary of Service	Collection staff remove dead animals from public rights-of-way within two business days.	Residents may call the Parks and Recreation department for pick-up of dead animals at no cost to the resident.	Animal Services will respond to all reports of deceased animals within the Arlington jurisdiction.	Yes, on-call from residences and public rights of way.	N/A	Typically, the Environmental Services Department provides removal of dead animals from public rights of way at no cost to residents (funded by the monthly solid waste rate). Residents may request dead animal removal from thier property for a fee based on size of the animal (from small domesticated animals to large farm animals).	The city's Solid Waste Division handles the pickup and removal of small dead animals on city streets, as well as on private property after the animal has been placed on the curb in a plastic bag.	Dead animal collection services are provided by the City's Streets Department.	

		Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Prescription medication drop-off									
Does the City offer prescription drug/medication drop-off disposal options to residential customers?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided by District.	Other City department - Police Department and Water Utilities	Other City department - Police Department	Solid Waste Department-through contractor	The City partners with the U.S. Drug Enforcement Administration	Other City department - program is provided by the Police Department and community support organizations. Solid Waste department is not involved in the program.	Partnership between City's Environmental Services Department (solid waste) and the Police Department.
	Is it funded through residential solid waste monthly rates?	No	N/A	No	No	Yes	No	No	No
	If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	Not funded by solid waste department. Funded through other City department.	Not funded through solid waste monthly rates or other solid waste funding. Other than staff time required, the City does not have designated funding for this program.	N/A	N/A, this is a federal program.	Drop off boxes are funded by community support organizations and the material disposal is funded by the Police Department.	The program is funded by the Police Department.
	Summary of Service	ARR operates two prescription medication drop-off kiosks for residents.	N/A	The City's Police Department and Water Utilities Department collaborate to host biannual drug take-back events for residents.	Dallas Police Department Community Outreach Unit helps coordinate the periodic Drug Takeback events that are hosted by The Dallas Area Drug Prevention Council.	The City provides a drug disposal kiosk at the Denton Police Department, available 24-hours per day.	The City partners with the U.S. Drug Enforcement Administration for bi-annual prescription drug take-back events.	The City has three 24-hour drug collection boxes around the City and five additional boxes at police stations open during business hours. The City previously conducted a pilot of distributing drug mail back envelopes to residents upon their request but program was discontinued due to low participation.	The City's police department, in partnership with Environmental Services, worked to establish a permanent prescription drug collection kiosk for residential use. Collection boxes are purchased, set out for collections, and shipped to a disposal contractor when full.
Drop-off centers									
Does the City operate a drop-off center, where residents can drop off various items/materials for proper disposal or reuse? If yes, briefly describe drop-off location(s) and materials accepted.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided or funded by the District. Residents may use the City of Austin's Recycle and Reuse Drop-off Center.	Solid Waste Department	Solid Waste Department	Solid Waste Department	Solid Waste Department (Environmental Services)	Solid Waste Department	Solid Waste Department (operated by City's contractor)
	Is it funded through residential solid waste monthly rates?	No	No	No	Yes	Yes	Yes	Yes	No;
	If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	Landfill drop off is funded through landfill contractor	N/A	N/A	N/A	N/A	Additional fees for drop-off of materials/items except for single-stream recyclables.
	Summary of Service	ARR operates the Recycle & Reuse Drop-off Center where residents may drop off various items to be recycled, reused, or safely discarded. Materials for drop-off include HHW, electronics and appliances, clothing and housewares, single-stream recyclables, tires, brush and yard trimmings.	The District does not operate a drop-off center. Residents may use the City of Austin's Recycle & Reuse Drop-off Center.	Residents may drop off material at the Arlington Landfill twice per year at no cost. The City also provides seven locations for drop-off of residential single-stream recyclables.	Residents may drop off material at the Customer Convenience Recycling Center at the landfill and at three transfer stations. Included drop-off for materials such as refuse, single-stream recyclables, grass clippings, electronics, scrap metal, tires.	Home chemical collection drop-off during normal business hours, recycling drop off sites.	The City operates five Citizens Collection Stations where residents can drop off various materials at no additional cost, including refuse, HHW, bulky items, single-stream recycling, yard waste, tires, electronics.	The City operates four drop-off stations throughout the City for residential drop-off of refuse, brush, recyclables, household chemicals, and donated items.	Residents may drop off refuse, recyclables, brush, tires, large appliances at the City's transfer station.
	Is material drop-off free for residents or are additional fees required?	Most drop-off services are free to residents but some services have a fee (e.g., tire disposal).	Austin's drop-off facilities are free for residents of City of Austin and Travis County.	Free drop off of recyclables and two landfill visits per year.	Free for residents (for vehicles and trailers less than 15 feet).	Free	Free for residential solid waste customers.	Free for residents that have an active solid waste account.	Additional charges apply for drop off of all materials/items except for single-stream recyclables.
	Is there a re-use store?	Yes, items available for free pick-up from the Reuse Store include: art supplies, cleaning products, household chemicals, automotive fluids, paint, and mulch.		No	Not reported.	Yes	One of the five Citizens Collection Stations has a reuse store.	There are not reuse stores at the drop-off centers. There is only an HHW reuse store at the HHW collection facility.	No

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	
ADDITIONAL CITY-WIDE SERVICES									
Street sweeping									
Does the City offer prescription drug/medication drop-off disposal options to residential customers?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided by the District. Street sweeping services are provided by the City of Austin.	Other City department - Stormwater Utility Division of the Department of Public Works and Transportation	Other City department - Transportation department and third-party contractors	Other City department	Other City department - Streets and Maintenance Department	Service is performed by Solid Waste Services. Equipment is funded by the City Environmental Fund.	Provided by other City department - Public Works
	Is it funded through residential solid waste monthly rates?	No	N/A	No	No	No	No	Partially funded through monthly rates; labor is funded by solid waste monthly rates. Sweepers (equipment) were purchased with funding from the City Environmental Fund.	No
	If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	Not funded by solid waste department. Funded through other City department.	Street sweeping is funded through the General Fund.	General fund	Funded through the Environmental Fee	See above.	Service us funded through Public Works.
	Summary of Service	Residential streets are swept six times a year, while major streets are swept once a month.	N/A	Street sweeping is provided for major thoroughfares and contracts with a vendor for sweeping in other areas including the Entertainment District, major intersections, and residential streets.	The City currently has a street sweeping contract which sweeps major thoroughfares, non-raised bike lanes and no residential streets. The Department also has in-house street sweepers that sweep the Central Business District streets with non-raised bike lanes (lanes not physically separated from motor vehicle traffic). Currently neither the contractor nor the City in-house street sweepers have small sweepers with the capability of sweeping inside the narrow raised bike lanes.	N/A	Street sweeping is provided by Streets and Maintenance Department.	Limited street sweeping (no residential areas) is provided by the City. Main arterials (Downtown and outwards 2-4 exits, and other key areas, not citywide) and select intersections swept by Solid Waste Services. Downtown sweeping is contracted by the Downtown PID (Public Improvement District).	Public Works provides street sweeping services for the City.
Bike lane sweeping									
Is bike lane sweeping performed as a separate service (with separate costs and/or equipment) from street sweeping?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided by the District. Services are provided by the City of Austin.	Not provided by the City	Other City department - Department of Public Works	Not provided by City	Other City department - Streets and Maintenance Department - same service as street sweeping	Provided by Solid Waste Services as time allows or upon request, not a regularly-scheduled service.	Not provided separately by the City. The City does not currently have bike lanes.
	Is it funded through residential solid waste monthly rates?	No	N/A	N/A	No	N/A	No	Partially funded through monthly rates; labor is funded by solid waste monthly rates. Sweepers (equipment) were purchased with funding from the City Environmental Fund.	N/A
	If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	N/A	General Fund	N/A	Funded through the Environmental Fee	See above.	N/A
	Summary of Service	Protected Bike lanes and bike lanes on boulevards are swept monthly; bike lanes (unprotected) in residential areas are swept on the residential sweeping cycle (about every two months).	N/A	N/A	There is no separate service or cost for bike lane sweeping. To the extent possible, bike lane sweeping is provided with street sweeping (for non-raised bike lanes).	N/A	Provided by City's Streets and Maintenance Department as part of street sweeping services.	Bike lanes are swept by Solid Waste Services up on request. There are only two regen air sweepers and two parking lot sweepers so the City doesn't have capacity to sweep all bike lanes regularly. Public Works also has a few street sweepers that are primarily used for construction jobs but upon request can sweep bike lanes as well.	N/A

	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	
Illegal dumping clean-up									
Does the City perform illegal dumping clean-up activities?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	ARR	Not provided by the District. Services would be provided by the City of Austin.	Service is provided by the City's Code Compliance Department.	Service is provided by multiple City departments, including Sanitation Department (solid waste).	Solid Waste Department, Parks and Recreation Department, Community Improvement Services Department, Keep Denton Beautiful	Provided by the Solid Waste Department (Environmental Services)	Solid Waste Services	Services is provided by the City's solid waste contractor.
	Is it funded through residential solid waste monthly rates?	No	N/A	Yes	Partially funded through solid waste monthly rates. If the Sanitation Department collects illegal dumping upon request by Code Compliance, the collection cost is absorbed within the Sanitation Department's collection services.	Partially funded through solid waste monthly rates	Yes, though there is not a dedicated budget for this service. It is performed and funded on an as-needed basis.	Yes	No
	If not through residential monthly rates, please briefly describe how service is funded.	Clean Community Fee	N/A	N/A	General Fund	Tonnage is accepted without revenue recovery.	N/A	N/A	If there is a customer address associated with the illegal dumping clean-up, the customer is charged the same rates as for a bulky waste collection. If there is no customer address associated, the contractor charges the City additional fees as though assessing a bulky waste collection.
	Summary of Service	Clean-ups for illegal dumpsites are typically performed monthly or as needed based on complaints.	N/A	Code hires contractors to perform cleanup of illegal dump sites.	The Solid Waste Department focuses on illegal dumping and litter issues near the City's landfill. Illegal dumping cleanup activities elsewhere in the City is performed by multiple City departments.	Waste collected at clean-up events such as Great American Cleanup, and as a function of code enforcement.	The City performs clean-up of illegal dumping on an as-needed basis.	City has five two-person crews that sweep the City for dumping in public rights-of-way. This is done proactively and via incoming requests through the City Call Center.	The solid waste contractor provides illegal dumping clean-up upon request for additional fees. Fees are the same as those assessed for extra bulky waste collections.
Neighborhood Clean-ups									
Does the City provide a "Dial-a-Trailer" type of program? Such a program would allow residents to call the City to request a solid waste collection vehicle to be stationed in their neighborhood for a period of time (e.g., a four-hour time block on a Saturday) for collection of brush and bulky items (intended to be an illegal dumping abatement program).	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Other City department, Austin Code Department, provides the service through a third-party contractor.	Not provided by the District. Services would be provided by the City of Austin.	Not provided by the City	Service is provided by the Code Compliance Department	Not provided by City	Solid Waste Department (Environmental Services)	No	Service is provided by the City's solid waste contractor. City or neighborhood would pay for it; ex: station brushy collection
	Is it funded through residential solid waste monthly rates?	No	N/A	N/A	No	N/A	Yes	N/A	No
	If not through residential monthly rates, please briefly describe how service is funded.	Provided via the Clean Community Fee	N/A	N/A	General Fund	N/A	N/A	N/A	Service would be paid for through additional fees by the requesting party, either the City or customer.
	Summary of Service		N/A	N/A	Neighborhood may request roll off dumpsters when there is a community cleanup event. Code Compliance Department will set up the roll offs before the event and pick them up after the event. There is no charge to the requesting residents/neighborhoods.	N/A	Solid Waste Department (Environmental Services) Provides roll-offs for Keep America Beautiful (KAB) events and does not charge tipping fees. Neighborhood associations receive one free clean-up event per year for which Solid Waste will collect material at no cost.	N/A	Upon request, the City's contractor would station a collection vehicle at a specified location for additional collection of large brush quantities or bulky waste.

		Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Does the City or its contractor provide additional solid waste/cleanup services to residents as needed in response to disasters?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Combination of ARR and third-party contractor	Not provided by the District. Services would be provided by the City of Austin.	Solid Waste & Recycling Department/City contractor.	Solid Waste Department	Solid Waste Department	Other City department - Streets and Maintenance Department	Service is provided primarily provided by the City's contractor (and their subcontractors); additional collections are provided by the Solid Waste Services Division. Other City departments also contribute to storm debris cleanup. City has stand-by contracts for clean-up after major storm/disaster events.	Service would be provided by the City's solid waste contractor.
	Is it funded through residential solid waste monthly rates?	Funding is provided by both residential monthly rates if ARR provides service and through the Clean Community fee if service is contracted.	N/A	No	Yes	Yes	No	Yes, to the extent that our collections contractor, and the Solid Waste Services Division are concerned. The Illegal Dump Team that is involved in Disaster response if fully funded by the residential monthly rate.	No
	If not through residential monthly rates, please briefly describe how service is funded.	Depending on whether the department assists or the contractor assists would determine if it was through the monthly rate or Clean Community Fee; i.e. staff from Collection Services as well as Litter Abatement might participate in cleanup activities.	N/A	Funding is through City General Fund	N/A	N/A	?	N/A	Funding is unclear since this need has not occurred. It would not be provided through monthly rates. The City would identify another funding source.
	Summary of Service	Depending on the size of the disaster, the department will utilize resources to help. The department also has a disaster response contract in place if needed.	N/A	The regular collection program is used for minor damage events through the additional 1 cubic yard of bundled materials.	After storms/sever weather Sanitation collects brush/debris at no additional charge.	City provides post-disaster material collection.	The Streets Department performs post-disaster response/clean-up as needed.	The City's residential solid waste contractor as well as Solid Waste Services Division and several other City Departments are involved in storm/disaster response/cleanup. These include: Transportation and Public Works, Park and Recreation, Solid Waste Services and the City's residential contractor. For large disasters, the City has standby disaster debris abatement contracts with 3rd party vendors.	The contractor is prepared for emergency response and debris cleanup if needed.
Special Events									
Does City or contractor provide solid waste/recycling services for special events? Please summarize.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Combination of ARR and contracted dumpster service	Provided by solid waste contractor.	Not provided by City. Event must supply services.	Service is provided by the Code Compliance Department	Solid Waste Department	Provided by the Solid Waste Department (Environmental Services)	Provided by combination of Solid Waste Services and other City department - Parks Department	Service is provided by the City's solid waste contractor.
	Is it funded through residential solid waste monthly rates?	Funded through combination of monthly rates, Clean Community Fee, and other City departments/events. Each event is required to pay for the services they use based on the ARR fee schedule; however, many fees are often waived by Council, in which case ARR absorbs the costs through base rates, cart rates, and the Clean Community Fee.	Yes. Service is provided as part of the residential services contract for no additional charge to District or residents.	N/A	No	No	No	Partially funded through monthly rates. Initial bins were purchased through grant funding (NCTOG and KAB). Replacement bins are purchased by the Solid Waste Serviced Division (funded by monthly rates) as needed.	No
	If not through residential monthly rates, please briefly describe how service is funded.	See above.	N/A	N/A	General Fund	Fees are charged for special events service.	The event sponsor contracts with City and pays for service for the event.	N/A	The City is billed separate, additional fees for special events.
	Summary of Service	ARR coordinates solid waste/recycling services for City co-sponsored events that are waived through Council fee waivers. ARR staff works with events to identify services needed and coordinates containers through contracted dumpster service. The monthly customer rate covers services to City co-sponsored special events (litter abatement and contracted dumpster service). City co-sponsored events have the option to request services from ARR for their event. Waste management needs can vary from providing only recycling bins to full waste management	At spring and fall festivals the contractor provides temporary waste containers.	N/A	For special events, the Code Compliance Department will provide services up on request. There are no additional charges.	The City will provide containers and collections for special events and applicable fees are charged.	The City provides carts for street festivals and small events. These are usually one-day events and can be up to three days.	Park Department staff loan out bins for special events upon request, at no charge. Park Department inventories bins and when bins, lids and bags need to be replaced or reordered the Solid Waste Services Division purchases these items.	Yes, the Contractor provides solid waste and recycling services via additional containers and staffing for City-sponsored special events. For all other events, the host must initiate and pay for service.

		Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown
Education and Outreach									
Does the City or contractor provide public education and outreach activities?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Provided by ARR staff and contractors	Not provided by the District.	Service is provided by the City staff in the Solid Waste & Recycling Department (not the contractor).	Currently provided by the Solid Waste Department. For FY19 the Zero Waste Division will be transferred to Office of Environmental Quality.	Solid Waste Department	Provided by separate group within the Environmental Services Department (not by the 275 Solid Waste employees)	The City provides outreach via multiple departments: Solid Waste, Community Engagement, Public Information Office	Service is provided by the City's solid waste contractor.
	Is it funded through residential solid waste monthly rates?	The residential monthly rate funds education and outreach to ARR customers. The Clean Community fee supports implementation of the Universal Recycling Ordinance and outreach to commercial and multifamily properties.	N/A	No	Yes	Yes	Yes	Yes	Yes
	If not through residential monthly rates, please briefly describe how service is funded.	This is a support service and is allocated annually to all of the departments' major fees (base fee, cart fee, and Clean Community Fee).	N/A	Position is an Environmental Education Specialist and funded through General Fund.	N/A	N/A	N/A	Solid Waste collects money for education from the collection contractor and recycling processor.	N/A
	Summary of Service	Staff participates at community events - ranging from tabling/booths, presentations and more. ARR manages a contract for K-12 education in the classroom with local school districts, charter and private schools. ARR also manages a contract to provide targeted door-to-door and neighborhood education about the new curbside composting service. The clean community fee supports implementation of the Universal Recycling Ordinance. ARR staff provides education and outreach to commercial and multifamily properties in the form of presentations, on-	There is not an education and outreach program, but information is available on the District website.	School presentations, workgroups, etc.	No description provided.	The City sponsors booths at public events, educates university students, promotes and educates regarding business and multi-family recycling.	A separate group within the Environmental Services Department (not by the 275 Solid Waste employees) provides outreach for the whole Department.	N/A	Funding for education and outreach activities is built into the contract. There are no additional charges to the City or customers. The City's contractor attends various events throughout the year and offers program education to customers.
Central Business District (CBD)									
Does the City solid waste department or contractor provide services to any special business or service districts? If so, please summarize.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Provided by a contractor	Not provided by the District. There is not a special business district.	Not provided by City	Not provided by City	Not provided by City	City partner - the DMD holds an interlocal agreement with the City to perform special sanitation services in the DMD.	Provided by Solid Waste Department	Services are provided to the City's Downtown area via contracted terms for commercial service.
	Is it funded through residential solid waste monthly rates?	No	N/A	N/A	N/A	N/A	No	No	No
	If not through residential monthly rates, please briefly describe how service is funded.	This service is funded via the Clean Community Fee and separate charges specifically to the customers located in the CBD.	N/A	N/A	N/A	N/A	Services are funded through the Environmental Fee.	Each small business is billed individually for service	Downtown services are funded through commercial customer rates.
	Summary of Service	Per Ordinance No. 20051020-063 the director is to contract with a private collection service to provide solid waste service in the are comprised of the city blocks adjacent to Sixth Street(East) between Congress Avenue and IH-35, the city blocks adjacent to Congress Avenue between Cesar Chavez and Eleventh street. This contract provides for daily refuse and recycling services in the alleys of the Downtown Central Business District. In addition to refuse and recycling collection, this contract provide services for cleaning	N/A	N/A	Not a major service. Sanitation does collect recyclables for a small number of businesses (about ten) in downtown area that the City partners with (mainly art & cultural facilities) with no charge. The initial intent was to promote recycling programs.	N/A	The Downtown Management District (DMD) holds an interlocal agreement with the City to perform special sanitation services in the DMD.	Garbage collection only, in 96 gallon carts. Collection is provided by the City's solid waste collection contractor and their subcontractors.	Services are provided to the City's Downtown area via contracted terms for commercial service.

ADDITIONAL RESIDENTIAL CUSTOMER SERVICES									
		Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
Household Hazardous Waste (HHW)									
Does the City offer household hazardous waste (HHW) collection services or program? (e.g., curbside collection, permanent collection facility, periodic or mobile collection events, etc.)	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Solid Waste Department	Not provided by City	Solid Waste Department in partnership with Comal County	Not provided by the City.	Other City department - Wastewater utility	Solid Waste Department	Solid Waste Department	Collection provided by contractor (Republic only)
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund	N/A	Partially funded through residential solid waste monthly rates	N/A	No	No	Partially funded through monthly rate; about 25% or \$30,000 annually	Yes, funded through monthly rates (no additional fee for residential customers)
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	Partially funded through other sources, including a \$30,000 grant from Edwards Aquifer Authority and Comal County provides up to \$50,000 for disposal.	N/A	Funded through the wastewater utility	Funded through Environmental Fee (\$2.24 monthly) paid by residential customers; no additional cost for customers	Additional funding provided by Hays County (\$30,000), Habitat Conservation Plan (\$30,000), and Water/Wastewater (\$25,000).	N/A
	Summary of Service	Permanent drop-off locations; residents may drop off HHW at the City's two Environmental Service Centers, and limited materials at the Westpark Consumer Recycling Center. The City also hosts periodic B.O.P.A. (batteries, oil, latex paint, and antifreeze) collection events.	Contractor or City do not provide HHW services. Residents may participate in Fort Bend County's drop-off program directly with County.	City and Comal County partner to provide HHW drop-off events performed by a contractor three times per year, with labor assistance from the City.	The City does not provide HHW service. Travis County residents may drop off HHW materials at the City of Austin's Recycle and Reuse Drop-off center at no cost.	The City has a drop-off location where residents may drop off material for free once per month, or pay an additional fee for additional scheduled drop-offs	Residents may utilize a permanent drop-off facility, monthly drop-off events at an additional facility, or periodic mobile collection events.	The City operates a permanent collection facility where all county residents may drop off HHW materials free of charge (single-family and multifamily). The HHW facility also has a reuse store.	On-call curbside collection
Textiles collection									
Does the City offer residents separate curbside collection of textiles?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Not provided by City	Not provided by City	Not provided by City	Not provided by City	Not reported	Not provided by City	Not provided by City	Collection provided by City's contractor
	Is it funded through residential solid waste monthly rates?	N/A	N/A	N/A	N/A	Not reported	N/A	N/A	Service provided at no cost
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	N/A	N/A	Not reported	N/A	N/A	N/A
	Summary of Service	Curbside textile collection is not provided. Three drop-off locations have boxes for textiles - no curbside.	N/A	N/A	N/A	Not reported	N/A	None currently. City may consider curbside program with Simple Recycling.	Separate weekly curbside collection is provided on same day as single-stream recycling.
Dead animal collection									
Does the City offer residents call-in collection of small dead animals, from public rights-of-way and homes? (does not include pets or livestock)	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Solid Waste Department	Other City department - Animal Services	Other City department - Animal Services	Not provided by the solid waste contractor. Service may be provided and funded by Animal Services.	Other City department - Animal Control	Solid Waste Department	Other City department - Animal Services	Other City department
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund	No.	No	N/A	Not reported	Funded through monthly rates with supplemental funding through Environmental Fee.	No	No
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	Not funded through solid waste budget. Funded by other City department.	Animal Control is funded through the General Fund	N/A	Not reported	Partially by Environmental Fee	General Fund; some additional funding from Hays County	General Fund
	Summary of Service	Small animal collection is provided at no charge to residents. Large animals are collected for a fee of \$102.62 per animal. Residents may call City for collection of dead animals at their home or along City of Houston maintained streets (excludes freeways and feeder roads as these are maintained by TXDOT).	The City's Animal Services Department collects dead animals if in the public domain.	Comal County and City of New Braunfels Animal Services provide collection of dead animals from public rights-of-way and private property.	N/A	Animal control will collect dead animals on City streets. For dead animals on County roads, Williamson County provides collection	Yes, City provides collection of small dead animals to residents and veterinary clinics.	The City's Animal Services department provides collection of dead animals and pets upon notification by residents.	Call-in collection of dead animals from public right-of-way.

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land	
Prescription medication drop-off									
Does the City offer prescription drug/medication drop-off disposal options to residential customers?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Other City department/City partner - Police Department and U.S. Drug Enforcement Administration.	Other City department - Police Department in partnership with the DEA.	Not provided by City	Other City department - Police Department	Other City department - Police Department partners with Drug Enforcement Administration (DEA)	Collaboration between Solid Waste Management Department and Police Department	Partnership between the City's Neighborhood Services Resource Recovery Department (solid waste) and the Police Department.	Not provided by City
	Is it funded through residential solid waste monthly rates?	No	No	No	No	Not reported	No	No	N/A
	If not through residential monthly rates, please briefly describe how service is funded.	Unknown	Program funded through the Police Department and the County.	Funded by New Braunfels Utilities (not a City department)	Funded through Police Department.	Not reported	Police Department	Funded by the Police Department (for material disposal).	N/A
	Summary of Service	The Houston Police Department and Mayor's Office partner with the U.S. DEA to participate in their bi-annual collection events.	The City's police department hosts bi-annual drug take-back collection events in partnership with the DEA.	New Braunfels Utilities partners with New Braunfels Police Department offer periodic events for disposal of medications.	The City's Police Department provides a 24 hour/7 days per week prescription drug disposal receptacle at the Pflugerville Justice Center.	The Police Department partners with the Drug Enforcement Administration to host biannual drug take-back events for residents	Periodically (about three times per year) the San Antonio Police Department, San Antonio Water System, and the Solid Waste Management Department collaborate to hold drug collection and disposal events.	The City's Community Services Resource Recovery Department (solid waste) and the San Marcos Police Department collaborate to provide a permanent prescription medication disposal kiosk for residents at the City's police station.	N/A
Drop-off centers									
Does the City operate a drop-off center, where residents can drop off various items/materials for proper disposal or reuse? If yes, briefly describe drop-off location(s) and materials accepted.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Solid Waste Department	Not provided by City	Solid Waste Department	Solid Waste Department	Solid Waste Department	Solid Waste Department	Not provided by City	Solid Waste Department
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund	N/A	No	No	Not reported	No	Yes (\$0.80 of resident's monthly fee goes to Green Guy Recycling (contractor) for drop-off services)	Tire recycling provided with monthly rate, no additional cost to residents. Cooking oil collection is provided at no cost to City.
Is there a re-use store?	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	Funded through the residential recycling rate (\$4.26 per month in addition to monthly rate)	Unsure.	Not reported	Environmental Fee	N/A	N/A
	Summary of Service	The City operates two Environmental Service Centers, six Neighborhood Depository/Recycling Centers, and four additional Neighborhood Recycling Drop-off Locations. Each site/facility accepts a variety of materials for proper disposal and/or recycling; accepted materials at each location differ but may include: bulky waste, brush, single-stream recyclables, textiles, building materials, concrete, tires, used motor oil, paint, etc.	No; the City's recycling center was closed in 2016 when curbside recycling services were begun. Residents may drop off materials at the Fort Bend County's Recycling Center free of charge.	The City operates the City Recycling Center, where residents may drop off single-stream recyclables, scrap metal, and Styrofoam for recycling at no additional cost. The Recycling Center also accepts appliances without Freon. Bulky waste drop-off events are provided four times per year for residential customers.	The City operates a recycling center where City residents and utility customers may drop off various materials for recycling, including: brush, large appliances, vehicle batteries, automotive fluids, tires, leaves, aluminum, cardboard, paper, and scrap metal.	The City owns and operates a Recycling Center where residents may drop off items including single-stream recyclables, brush, HHW, large appliances, and some other special wastes. Tires and electronics are not accepted.	The City operates four bulky waste collection centers where residential solid waste customers (who pay the Environmental Fee) can drop off bulky waste for free. The City operates two brush recycling centers where residential solid waste customers (who pay the Environmental Fee) can drop off brush to be recycled for a fee (residential rate) of about 25 cents per pound.	Residential rate-payers have access to Green Guy drop-off facilities with monthly solid waste rates (single-stream, tires, large appliances and other materials). The City also has a monthly brush drop off for free where residents can drop off large brush quantities and pick up mulch for free. The City itself does not operate drop-off centers,	The City operates the Public Works Service Center where residents can drop off passenger vehicle tires and used cooking oil only.
	Is material drop-off free for residents or are additional fees required?	Free, no additional fees required (residents may use centers up to four times per month).	N/A	Free for residential solid waste customers	Free	Not reported	Free for bulky waste drop-off; additional fee for brush drop-off.	No additional fees are paid; drop-off service is funded through monthly rates.	Free for residents (up to four tires per week and 10 gallons of cooking oil per day).
	Is there a re-use store?	The City operates a ReUse Warehouse at one drop-off location for reusable building materials.	N/A	No	No.	Yes	No	Yes, Green Guy Recycling has a reuse store.	No
ADDITIONAL CITY-WIDE SERVICES									
Street sweeping									
Does the City offer prescription drug/medication drop-off disposal options to residential customers?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Other City department - the Street and Bridge Maintenance Branch of the Public Works Department.	Other City department - Streets and Drainage division of Public Works	Other City department - Streets and Drainage Division of the Public Works Department	Not provided by City	Not reported	Other City department, Transportation and Capital Improvements Department	Provided and funded by the City's Streets Division of the Transportation Division.	Other City department
	Is it funded through residential solid waste monthly rates?	No	No	No	N/A	Not reported	No	No	No
	If not through residential monthly rates, please briefly describe how service is funded.	Street and Bridge Maintenance Department budget	Street sweeping is funded through the Streets and Drainage division of Public Works.	General Fund	N/A	Not reported	Unsure, probably General Fund	General Fund and Community Enhancement Fee	General Fund
	Summary of Service	Service performed in the downtown sector of Houston weekly and four times a year on major thoroughfares throughout the city.	Street sweeping is provided by Streets and Drainage division of Public Works.	Street sweeping is provided by the Streets and Drainage Division of the Public Works Department.	N/A	Not reported	Street sweeping is provided by Transportation and Capital Improvements Department.	The City utilizes a large street sweeper for major roads and a smaller one (through Easter Seals) in Downtown area that can reach parking spaces.	Once a month sweeping of all non-residential streets.

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land
Bike lane sweeping								
Is bike lane sweeping performed as a separate service (with separate costs and/or equipment) from street sweeping?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Not provided as a separate service from street sweeping.	Other City department - Streets and Drainage division of Public Works	Not a separate service - bike lanes are swept when streets are swept	Not provided by City	Not reported	Not provided by City	Not provided separately by City (part of Street Sweeping services)
	Is it funded through residential solid waste monthly rates?	N/A	No	No	N/A	Not reported	N/A	N/A
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	Street sweeping is funded through the Streets and Drainage division of Public Works.	General Fund	N/A	Not reported	N/A	N/A
	Summary of Service	N/A	Street sweeping is provided by Streets and Drainage Division of Public Works.	Street sweeping is provided by the Streets and Drainage Division of the Public Works Department.	N/A	Not reported	N/A	N/A
Illegal dumping clean-up								
Does the City perform illegal dumping clean-up activities?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Solid Waste Department	The City contracts separately for illegal dumping clean-up from regular solid waste services. Illegal dumping clean-up is not funded through solid waste monthly rates.	Provided by a combination of Solid Waste and Streets and Drainage	Not provided by solid waste contractor. If provided, would be handled by the Streets/Public Works department.	Not reported	Solid Waste Department	Combination of Solid Waste, KSMB, and Code Compliance
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund.	No	No	N/A	Not reported	Funded through monthly rates with supplemental funding through Environmental Fee.	No
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	Funded through the General Fund.	Several ways service is funded: charged to the dumper, lien is put on the property or it is just done at no charge.	N/A	Not reported	Partially by Environmental Fee	General Fund if performed by Code Compliance; KSMB support is funded by General Fund and Community Enhancement Fee.
	Summary of Service	The Solid Waste Department provides illegal dumping clean-up based on reports to 311, or their own survey of a service area. When crews have extra time, they will also pick up material as they are found. No charge to residents. If police charge someone with illegal dumping there may be fines but that revenue does not contribute to solid waste services.	The City contracts separately for illegal dumping clean-up.	When a dump site is identified, an investigation is done and if the responsible party is not identified, a request is made for clean up, a record of cost is done and submitted for payment or lien against the property owner.	N/A	Not reported	City provides frequent illegal dumping clean-up with dedicated crews. This is seen as extension of drop-off services. Clean-up is both proactive by City and call-in based.	Small amounts of material are collected by the solid waste department and KSMB; large amounts are collected by Code Compliance.
								The City will utilize contingency funds for environmental clean-up if responsible party cannot be identified, or if responsible party does not have remediation company on-hand.
Neighborhood Clean-ups								
Does the City provide a "Dial-A-Trailer" type of program? Such a program would allow residents to call the City to request a solid waste collection vehicle to be stationed in their neighborhood for a period of time (e.g., a four-hour time block on a Saturday) for collection of brush and bulky items (intended to be an illegal dumping abatement program).	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Solid Waste Department partners with Keep Houston Beautiful (KHB) to provide similar programs.	Not currently provided by City.	Not provided by the City	Not provided by City	Not reported	Solid Waste Department	Not provided by the City
	Is it funded through residential solid waste monthly rates?	No	N/A	N/A	N/A	Not reported	No	N/A
	If not through residential monthly rates, please briefly describe how service is funded.	Not reported	The City would contract separately for this service.	N/A	N/A	Not reported	Environmental Fee	N/A
	Summary of Service	Solid Waste Department has a partnership with KHB and assists with litter and clean-up, provides and services dumpsters for clean-up events.	This would be considered a secondary service by the City. The City is working on a contract for this type of service.	N/A	N/A	Not reported	The City's Dial-A-Trailer program allows neighborhoods the opportunity to schedule and reserve a garbage truck on a Saturday to be used for the disposal of brush and bulky items.	N/A

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land	
Post-disaster response/cleanup									
Does the City or its contractor provide additional solid waste/cleanup services to residents as needed in response to disasters?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Provided by Solid Waste Department and contractors	Not provided by the City's solid waste contractor; Provided either through the County's contractor or one-off contracts as needed.	Provided by Solid Waste and other departments	Solid waste contractor would provide service if requested by City but not in contract provisions.	Not reported	Collaboration between Solid Waste, Public Works, and Emergency Response departments.	All City Departments, solid waste contractor (TDS), and additional contractors if needed	Solid Waste Department (debris contractors)
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund.	No	Not a budget item but Solid Waste pays for clean-up. If there is a large enough disaster event, the department receives a percentage reimbursement from FEMA.	No	Not reported	Yes, funded through monthly rates; the department seeks reimbursement through FEMA or other sources but funds service with monthly rate revenue if additional funding is not received.	No	No
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	Funded through the General Fund.	See above.	Solid waste contractor would provide service if requested by City but not in contract provisions.	Not reported	N/A	All City departments contribute if needed, utilize bulky collections under existing contract if possible, if large amounts City will procure additional collection contracts	FEMA
	Summary of Service	Both city crews and contractors provide post-disaster clean-up, debris collection, and debris monitoring. Localized clean-up is provided by City crews and City will suspend non-essential collections to utilize equipment for disaster response.	Post-disaster response and clean-up is not included in the City's existing solid waste services contract. Large-scale services are provided by the County's contractors and the City pays the County with secondary services. If there were a smaller, localized need for additional disaster-related clean-up, the City would contract separately for service.	Debris is separated and set at the curb for collection, over a period of time it is removed by debris type.	Solid waste contractor would provide service if requested by City but not in contract provisions.	Not reported	All disaster response is coordinated through Emergency Response (Fire Department). Public Works moved debris out of roadways and Solid Waste collects it.	After events resulting in large amounts of material, all City departments contribute to clean-up and the City may issue an emergency RFP and secure additional collection contracts; for smaller amounts of material, City will work with existing contractor to utilize bulky pick-ups under the existing solid waste collection contract.	City has contracts with debris monitoring and removal contractors to be utilized in the event of a debris causing event.
Special Events									
Does City or contractor provide solid waste/recycling services for special events? Please summarize.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Provided by Solid Waste Department	Solid Waste Department	Solid Waste department	Provided by solid waste contractor	Solid Waste Department	Occasionally provided by Solid Waste if asked by City, not a regular service.	Provided by solid waste contractors for large events (per contract)	Solid Waste Department
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund.	Yes	Solid waste monthly rates fund City-sponsored events; private event organizers are charged using temporary container rates.	Yes	Yes	Sometimes - Solid Waste Department seeks reimbursement if possible, otherwise it is funded through monthly rates.	Yes	Yes
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	See Above	N/A	N/A	See above.	N/A	N/A
	Summary of Service	Solid Waste provides services for smaller City sponsored special events. For larger events, the City crews contribute to solid waste services but the main services will be contracted.	Yes, Contractor shall provide collections for City's annual litter collection event, holiday tree collection, and event boxes and liners at the City's request.	For City sponsored events solid waste provides dumpsters, carts and recycling containers, all of that is picked up during the event by city staff and removed by solid waste. Private events are similar but the organizers must coordinate in advance to ensure availability and they are charged using our temporary container rates.	Contractor provides service for City-sponsored events.	Per the City's contract, the contractor provides additional collection containers for City events.	Solid Waste Department occasionally provides services at big City-sponsored parties or events.	All events held in parks must obtain a permit and the solid waste department works with event organizers to maximize waste diversion by utilizing existing dumpsters (no special services).	Services provided upon request of City staff.
Education and Outreach									
Does the City or contractor provide public education and outreach activities?	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Provided by Solid Waste Department	Solid Waste Department	Provided by Solid Waste Department	Provided by solid waste contractor	Solid Waste Department	Solid Waste Department	Provided by solid waste department	Solid Waste Department
	Is it funded through residential solid waste monthly rates?	Funded through Solid Waste budget from General Fund.	Yes. Provided as required by contract. The contractor pays \$1.14 per household (built into monthly rates) per year to the City for public education, equivalent to about \$25,000 per year.	Yes. Approximately \$10,000 to \$16,000 annually is dedicated to solid waste and recycling education and outreach efforts.	Yes	Not reported	Yes. About \$2 million annually budgeted for education and outreach.	Yes, \$0.21 of resident's monthly fee is allocated to education and outreach.	Yes
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	N/A	N/A	Not reported	N/A	N/A	N/A
	Summary of Service	There are two major groups that contribute to public education and outreach: Public Information Team provides media outreach and inquiries, social media, flyers, etc. The Community Outreach team provides school, town hall, and HOA presentations.	Yes. Per contract, Contractor must provide MRF tours, school recycling presentations twice per year, and provide educational materials to schools, youth groups, and other groups as deemed appropriate by the City.	The Solid Waste Department provides presentations, news paper adds, short videos played in local theater, information on government access channel, web site, My Waste app, and participation in community events.	The contractor has informational booths at City events.	City employees conduct most public education and outreach, including maintaining the City's solid waste website, and heavy use of social media resources. The main cost is staff time. Per contract, minimal public education and outreach is required from the contractor.	Solid Waste has 4-5 full-time recycling coordinators who provide community presentations. 90% school presentations, 10% other (e.g., City Council).	City solid waste employees conduct various education and outreach efforts and events including: apartment recycling competition and education, hand outs, recycling and landfill diversion games/education at many City events; event for recycling week; plastic bag and bottle exchange (resident may exchange plastics for reusable bags), attend National Night Out and neighborhood events, spring concert series, 72 Degrees Festival; Per contract TDS also attends the 72 Degrees Festival.	Solid Waste staff provides educational outreach material to residents through participation in various community events.

	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land	
Central Business District (CBD)									
Does the City solid waste department or contractor provide services to any special business or service districts? If so, please summarize.	Is this service provided by: - Solid Waste Department (or contractor) - Other City department - Not provided by City	Not provided by City	Separate CBD service is not provided by the City. WCA has an exclusive franchise in the City for regular commercial collections.	Not provided by City	Not provided by City	Not currently provided by City. See notes below.	Not provided by City	Not provided by City	Not provided by City
	Is it funded through residential solid waste monthly rates?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	If not through residential monthly rates, please briefly describe how service is funded.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Summary of Service	The City has several large employment centers, which typically have management districts that are responsible for providing specialized services. Solid Waste is not involved.	N/A	N/A	N/A	Currently, commercial services in the Downtown area are provided in the same manner as services for other commercial customers. Providing services in the Downtown areas is challenging due to space constraints and limited capacity. The City is in the process of considering implementing a 4-block special service district to be services with compactors and carts.	There are some services for trash containers in the Downtown area as part of regular commercial collections, not special district or services.	The City has a Downtown area, but customers contract for services on their own (with permitted haulers). The City only services refuse and recycling receptacles for public use.	N/A

ADDITIONAL QUESTIONS									
	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	
1	How does the City determine when, whether, and by how much to increase solid waste monthly rates?	Each year the rates are set based on the cost of service. If new services are provided in a given year, their cost and requisite fee amount is included in the appropriate rate (base fees, cart fees, Clean Community Fee)	The contract allows for the contractor to request a rate increase on an annual basis, if the contractor believes it is needed.	Rate increases are requested by the collection contractor.	The residential solid waste collection rate is designed to recover the respective cost for providing such service. Rate is usually adjusted annually through the budget process and the rate is set to recover the projected residential collection cost for the upcoming budget year	The City of Denton's rates are based on cost of service recovery.	Annual budget proposals are developed based on projected cost of service and rates may be adjusted if approved.	Generally, City approves a rate increase during the annual budget process if/when proposed cost of service and annual CIP expenditures exceed the projected revenue from residential rates. Solid Waste has advocated for a rate increase for the past 2-4 years but it has not been passed. They are again requesting a rate increase for the 2018-2019 fiscal year and may incorporate public outreach/involvement.	Based on rates obtained during each procurement process.
	Is there a particular metric used (for example, percentage of median income, federal poverty guidelines, or other?)	Cost of Services provided	Rate increases are based on the CPI for diesel fuel and trash collection.	The contractor must submit list of increases to operational costs as justification for rate increases.	No	No	No	No	No
	Are there any scheduled rate increases? (frequency, percentage, other criteria?)	No, however any rate increases in the 5-year forecast are due to enhanced/additional programs	Annually, as requested and approved.	The contractor submits an annual request to the City for rate increases.	No pre-scheduled rate changes. If the residential collection cost is projected to change for the upcoming fiscal year, the monthly residential rate will be adjusted accordingly during the annual budget process to recover the projected cost for the upcoming year.	No	No formal schedule, but a rate increase will be seriously considered in the 2019-2020 budget.	No	No
2	Does the City, or solid waste department, have guidelines for defining "affordability" of rates?	Not currently	No hard guidelines but the District strives to "provide the most services for the best price for residents" and to keep rates below the City of Austin rates.	No	No	No	No. Residents 65 years and older receive a 20% discount on solid waste rates.	No	No
3	Does the City or the solid waste department have any internal policies in place that may be impacting costs for the department (and therefore impacting customer rates)? E.g., living wage requirements, requirements for purchase of "green" power?	Yes; the department must participate in the City's benefits package which includes a living wage minimum of \$15/hour for FY19 along with numerous other employee benefits. Additionally, various cost allocations charged by the City for support services such as technology support, fleet maintenance, and other administrative support functions;	No	No	Yes, Sanitation Services uses contracted labor and the contractor is required to meet the minimum wage floor.	No	No	The department has a financial requirement to maintain a minimum 25% Fund Balance.	No
4	Do residential rates provide any amount of support/subsidy for commercial or multifamily services? Or vice versa?	The department services single-family up to quadplex residents that are all charged the residential rate. Other than those, the department does not service, nor charge apartment dwellers or residents living in units larger than quadplexes.	The District does not provide commercial and multifamily services.	No	Residential collection service does not provide support to commercial service costs. Multifamily customers/apartments that use Sanitation's collection services are charged at the same per roll cart rate like single family customers. Revenues from the City's landfill commercial customers/private haulers have supported/subsidized residential collection services in the past years.	No	Approximately 26% of the Solid Waste budget is transferred to other departments and the General Fund, including all revenue generated through the franchise fee (\$4.00/customer/month). 10% of the Environmental Fee (\$5.00/customer/month) is used for administrative purposes.	Yes, Solid Waste does help support Multi-family Inspection & Recycling Program. Solid Waste does not provide funds but does allocate staff time and resources.	No
	Do rates for either sector either under-recover or over-recover the cost of service for that sector?	No	N/A	N/A	No	Yes	Not reported	Commercial and multifamily services are provided via an open market system.	No
5	Are there any shared resources that serve both the residential and commercial sectors? E.g., staff resources such as policy and technical support?	The department has a few (2,216 as of 8/31/2018) commercial curbside customers that receive trash and recycling collection. These customers are spread throughout the service area and are not collected on a dedicated route. Since these customers utilize the same trash carts as residential customers, they are collected with the same vehicles and staff.	The District does not provide commercial and multifamily services.	N/A. Services provided by contractor.	Yes	Yes, recycling drop-off sites; administrative and overhead expenses are shared across the Solid Waste fund.	No, Solid Waste does not provide commercial services.	The Material Management Team services commercial and residential sectors. Also what is referenced Question #4.	N/A. All services are provided by the contractor.
	Are costs shared between residential and commercial services for these shared resources?		N/A	N/A	Yes. Sanitation Services has a small number of commercial accounts and the collection service for these commercial accounts is provided by the same division that provides residential collection services.	Yes	No	No	N/A
	Austin	Anderson Mill	Arlington	Dallas	Denton	El Paso	Fort Worth	Georgetown	
6	Are there any maintenance operations performed/provided by the City that are funded by residential solid waste monthly rates? (e.g., fleet maintenance, diesel surcharge, other "greater good" activities/fees)	Yes. Fleet maintenance and fuel charges (electric infrastructure surcharge) are expensed where the vehicles/equipment are utilized and are thus included in the cost of service.	No, the entirety of monthly rates is paid to the contractor, who provides all residential solid waste services.	Illegal Dumping clean-up is provided by Code Compliance and funded by solid waste monthly rates.	Yes, the fleet maintenance is provided by the City's internal service department and Sanitation is charged for the cost. The fleet maintenance cost/budget is one of the costs included in the residential fee model.	Yes. Fleet Maintenance, Keep Denton Beautiful, Facilities Maintenance, Technology Services.	Yes, Solid Waste pays a 10% surcharge on diesel fuel for its fleet, which is used to subsidize other departmental fleet operations and a portion is transferred to the General Fund.	The Solid Waste Budget does include expenditures/transfers to pay for our vehicle maintenance completed by City Department, we cover Code Enforcement expenses in support of solid waste enforcement activities, we cover the Water Department allocation for processing Solid Waste accounts (fees) as a part of the Utility Bill, and we cover our internal allocation for the various city departments: HR, Legal, Risk & IT areas. "Greater Good" categories of litter and illegal dumping are funded by solid waste.	N/A. All services are provided by the contractor.

ADDITIONAL QUESTIONS									
	Houston	Missouri City	New Braunfels	Pflugerville	Round Rock	San Antonio	San Marcos	Sugar Land	
1	How does the City determine when, whether, and by how much to increase solid waste monthly rates?	Not applicable - the City does not have solid waste rates. Services are funded through the General Fund.	Terms for rate increases are written into the City's solid waste services contract. Based 80 percent on the CPI and 20% on fuel prices; rate increases are capped at five percent	We have a 5 year solid waste rate model that is reviewed annually that suggest the needed increase if any.	The contractor proposes rate changes to City Council when the feel it is necessary and Council approves or denies.	Not reported	The main driver of rate increases is the pay-as-you-throw (PAYT) rate structure: 1) City has differences in rates between cart sizes to try to drive increases in recycling rates 2) Policy-driven: the solid waste operation is not intended to be revenue-neutral. The City actively tries to try to increase overall revenue for the purposes of preparing for future needs and capital expenses, hauling contracts, and building capital reserves.	Rate increases are per contracts; TDS contract specifies a 3% annual increase; Green Guy Recycling rate increases are based on the CPI, just under a 3% increase this year.	Increases are based on terms of each contract.
	Is there a particular metric used (for example, percentage of median income, federal poverty guidelines, or other?)	N/A	No. Basis is per contract.	No	No	Not reported	No	No	Yes, based on CPI.
	Are there any scheduled rate increases? (frequency, percentage, other criteria?)	N/A	No	No	No	Not reported	No	Yes, rates are increased per contract every October 1.	Republic annual increase is based on CPI, with minimum of 2.5% and maximum of 5%; Best Trash annual increase based on CPI.
2	Does the City, or solid waste department, have guidelines for defining "affordability" of rates?	N/A	No	No	No	Not reported	No	No	No.
3	Does the City or the solid waste department have any internal policies in place that may be impacting costs for the department (and therefore impacting customer rates)? E.g., living wage requirements, requirements for purchase of "green" power?	N/A	No	Yes; the City's Fleet Maintenance Division is funded by Solid Waste, City facilities do not pay for collection service, and Solid Waste does annual interfund transfers for street maintenance, river cleanup, and admin support from the General Fund	No	Not reported	No; not officially, Solid waste does purchases CNG trucks.	No	No
4	Do residential rates provide any amount of support/subsidy for commercial or multifamily services? Or vice versa?	N/A	Commercial rates provide some funding support for the contractor's residential operations in order to help maintain lower residential rates.	Yes, although not intentionally.	Commercial services are provided through a franchise system. Customers contract directly with the hauler.	Not reported	Solid Waste Department provides oversight of multifamily recycling ordinance as well as commercial business outreach and support team. These are funded by residential rates. The department does not directly handle any commercially-generated material.	No	No
	Do rates for either sector either under-recover or over-recover the cost of service for that sector?	N/A	Per the contractor, the residential rates under-recover.	Residential over recovers and commercial under recovers.	N/A	Not reported	N/A	N/A (residential is exclusive, commercial is permitted open-market)	No
5	Are there any shared resources that serve both the residential and commercial sectors? E.g., staff resources such as policy and technical support?	N/A	N/A	Multifamily complex tenants are charged residential rates but are serviced by commercial operating system.	N/A	Not reported	N/A	Businesses may utilize recycling drop-off center.	Solid Waste staff handle both residential and commercial sectors.
	Are costs shared between residential and commercial services for these shared resources?	N/A	N/A	Yes	N/A	Not reported	N/A	Not reported.	Program is funded through residential collection fees, commercial franchise fees, and commercial waste licensing program.
6	Are there any maintenance operations performed/ provided by the City that are funded by residential solid waste monthly rates? (e.g., fleet maintenance, diesel surcharge, other "greater good" activities/fees)	N/A	N/A	Yes, Fleet Maintenance	N/A	Not reported	No. The Solid Waste Department provides fleet maintenance, but this is paid for as an internal services fund by other departments.	No	Solid waste funds are utilized for fleet replacement and street repairs.

Organizational Structure

	Residential Collections	Commercial Dumpster Collections	Facilities Operated by City	FTEs	Median Employee Salary	% Benefits	Number of Households	Monthly Cost per Household of Salaries & Benefits
Austin	Public	Open Franchise	HHW	276	\$44,803	35%	200,550	\$6.94
Anderson Mill	Private	N/A	None	0 ^a	N/A	N/A	2,800	N/A
Arlington	Private	Excl. Franchise	LF	2 ^a	N/A	N/A	93,700	N/A
Dallas	Public	Open Franchise	3 TS, LF, MRF	479	\$35,701	45%	245,000	\$8.43
Denton	Public	Public	HHW, LF, MRF	123 ^b	\$54,058	Not reported	33,200	Data not reported
El Paso	Public	Open Franchise	LF, TS	275	\$30,644	46%	180,000	\$5.70
Fort Worth	Private	Open Franchise	LF	116 ^b	\$48,096	Not reported	22,500	Data not reported
Georgetown	Private	Excl. Franchise	TS	1 ^a	N/A	N/A	21,500	N/A
Houston	Public	Open Franchise	3 TS, MRF	472 ^b	Not reported	33%	390,400	Data not reported
Missouri City	Private	Excl. Franchise	None	0 ^a	N/A	N/A	23,400	N/A
New Braunfels	Public	Public	None	55	\$35,402	35%	28,900	\$7.58
Pflugerville	Private	Excl. Franchise	None	0 ^a	N/A	N/A	23,300	N/A
Round Rock	Private	Excl. Franchise	DO	4 ^a	N/A	N/A	26,400 ^c	N/A
San Antonio	Public	Open Franchise	TS	619	\$38,924	42%	356,000	\$8.01
San Marcos	Private	Excl. Franchise	None	3 ^a	N/A	N/A	9,200	N/A
Sugar Land	Private	Excl. Franchise	None	4 ^a	N/A	N/A	40,000	N/A

a Residential services are provided by a third-party contractor. Therefore the City has zero to few employees within the solid waste department.

b These numbers of FTEs include primarily those involved in Solid Waste operations but also include some employees in supportive services such as administration, human resources, purchasing, public information, etc.

c Number of Households for Round Rock is the number of 1-unit detached housing units based on American Community Survey (ACS) 2016 5-year estimates. All other Number of Households data were provided by the responding benchmark cities.



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