

AMWA Platinum Award Application for 2019



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City of Fort Worth
Water Utility
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Utility Profile

Fort Worth is now the 13th largest city in the United States, jumping two spots from last year. It is situated in the fastest growing metropolitan region in the country.

Once dependent on agriculture, oil, and defense, Fort Worth is developing into a major center for industry, technology, distribution, and transportation. According to the North Central Texas Council of Governments' employment forecast, employment in the City of Fort Worth will continue to rise at a rate of 1.5 percent annually to approximately 701,524 jobs within the city limits in 2030.

Owned and operated by the City of Fort Worth, the water and wastewater utility serves as both a retailer and wholesaler of treated drinking water and wastewater treatment. Under the Council-Manager form of government, mayor and council oversee the general administration, make policy and set the budget. The mayor and city council appoint a professional city manager to carry out the daily administrative functions, including hiring of department directors.

The water system dates back to 1884 when the city acquired a small private system which started in 1882. In 1891, the city council entered into two contracts totaling \$728,000 for construction of the first water plant.

Today Fort Worth provides treated drinking water to more than 1.2 million people, in Tarrant, Johnson, Denton, Parker and Wise counties. The drinking water operation serves residents of Fort Worth and 30 surrounding communities, with two new wholesale customers connecting in the coming years. There are five drinking water plants with a combined capacity of 500 million gallons a day. There are 258,408 metered connections, and 3,565

miles of water distribution mains. In Fiscal Year 2018, Fort Worth Water treated and distributed more than 71 billion gallons of potable water.

The utility operates one water reclamation facility, permitted at 166 million gallons a day. It serves Fort Worth and 23 surrounding communities. There was 42.7 billion gallons of wastewater collected and treated, of which 42.390 billion gallons were returned to the watershed and 318 million gallons were sold as reclaimed water. There are 3,508 miles of sewer collection mains in the system. The population served by the wastewater operation is almost 1.2 million.

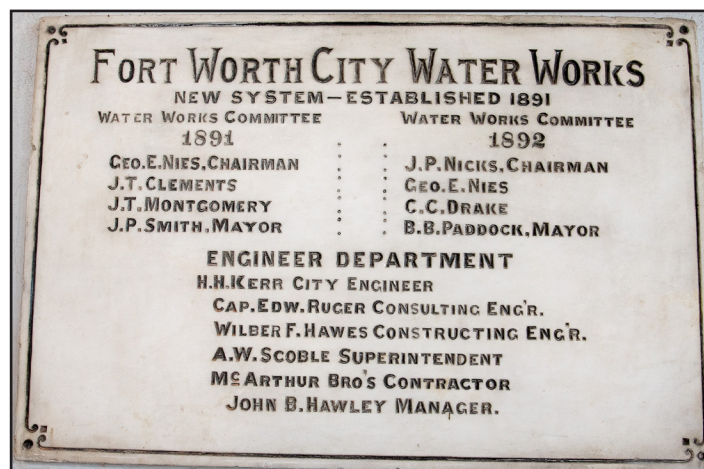
Last fiscal year, the utility completed \$150.1 million in capital projects and processed about 3.02 million billing statements for multiple city services. The five-year capital improvements plan is \$1.1 billion.

The water supply is 100 percent surface water. Raw water is purchased from Tarrant Regional Water District, the entity that is also responsible for flood control along the Trinity River through Fort Worth. The city owns and manages Lake Worth, though TRWD owns the water rights in the lake. Watershed management for Lake Worth is a shared responsibility among several city departments. The water utility's role is in regards

to the septic systems operated around the lake. Over the past two decades, Fort Worth has implemented projects to extend the water and wastewater system to the area so the septic systems can be eliminated.

The utility's Fiscal Year 2019 budget is \$459,488,200, and

is about 24 percent of the city's overall operating budget. Operated as an enterprise fund, the utility is self-sustaining through its rates and fees. It does not receive any property or sales tax revenue.



Mission Statement

To enable our community to thrive with clean water done right every time.

Vision Statement

To to be the premier water utility focused on exceeding customer expectations through value-driven, innovative services.

Fort Worth Core Values

City of Fort Worth employees provide municipal services to over 895,000 residents. Each day, these employees are moving about the city, doing work that helps make Fort Worth a strong community and a great place to live. There are six values that guide employees as they go about this work.

As Fort Worth continues to grow and change, these principles help keep employees on point, providing the best service to citizens, businesses and fellow employees.

- **Exceptional Customer Experience**
- **Accountability**
- **Ethical Behavior**
- **Diversity**
- **Mutual Respect**
- **Continuous Improvement**

These values are at the heart of the utility's MyH2O program it is implementing over the next several years. The program will transform all aspects of the utility's operations.

MyH2O is a comprehensive program designed to improve customer engagement and internal operational efficiency. The MyH2O Program will change how the utility communicates with its

customers and provide customers with tools to understand and manage their water use. It will include a customer web portal and mobile device accessibility, advanced metering infrastructure and system monitoring tools for leaks, pressure fluctuations and backflow events. MyH2O will provide a wealth of benefits to the utility and its customers because of the increased amounts of data available.

MyH2O will create a better customer experience with improved business practices and employee-customer interactions. Technological advancements in customers' everyday lives have changed customer expectations for interfacing with the water utility.

This project includes reassessment and technological advancement of internal and external business processes and expanded customer options for interacting with the utility. The foundation for the improvements is the implementation of advanced metering infrastructure which will provide data transmitted via radio frequencies. The increase in data will provide utility staff and customers access to accurate usage information on a daily basis rather than a monthly basis. This increased information will be paired with new tools, allowing customers to understand and manage their water use and thus improving services rendered by the utility.

The implementation time line is over several years with full implementation anticipated by the end of 2021. A limited deployment is scheduled for 2019. This limited deployment will be used to evaluate all aspects of the program, including communications, and what changes are required before full implementation begins. Fort Worth will use information from customer calls, surveys and other stakeholder feedback to improve its outreach and education efforts.



Keys to Management Success

Organizational Restructuring

The utility's organizational structure changed significantly in December 2017. Over the past 20 years, customer expectations have evolved; technology has evolved; regulations have evolved. The utility's organizational structure had not.

Fort Worth brought in a consultant to assess if the existing operational structure was sufficient or if changes should be made to meet the changing times.

The new structure positions the utility to better address the challenges of a growing population, ever increasing customer expectations, aging infrastructure and continued pressure to contain rates. The reorganization ensures the utility has the right people in the right places to lead us into the future. The changes occurred over time and it took till this year to fill four new leadership team positions and other new positions created through the reorganization. The reorganization deliberately placed more emphasis on organizational development.

Business Planning

For the past four years, the utility has conducted annual planning sessions with mid-level and upper-level management to set key initiatives for the upcoming budget year. The planning session is held prior to the budget process so necessary funding to complete initiatives can be included in the budget.

The utility uses the Attributes of Effective Utility Management to develop goals to drive and measure performance.

Performance Measurement

While the city's performance scorecard includes about 20 measures pertaining to the utility, divisions within the utility use many other metrics to track all aspects of ongoing operations.

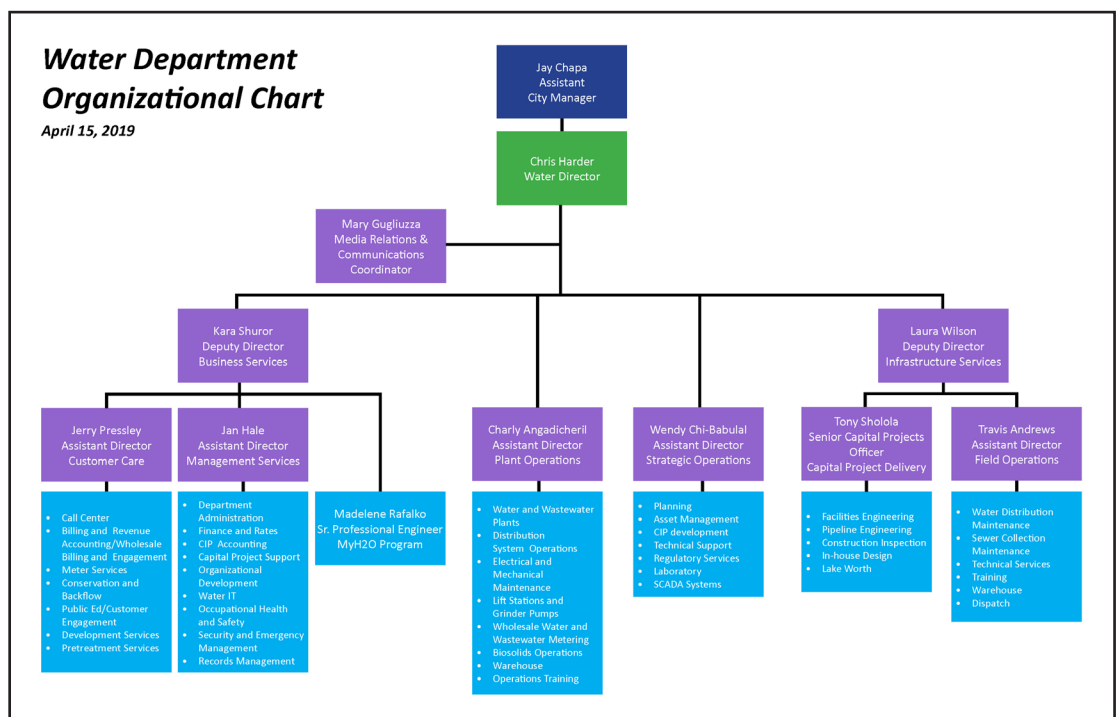
Sound Financial Position

Maintaining a strong financial position has always been a priority for the utility and city management. In recent years, new and stronger financial management policies have been enacted and the utility has successfully increased its days cash on hand and debt service coverage ratio while balancing the impacts to ratepayers.

Collaboration

The utility does not operate within a vacuum. Employees must work across the divisions of the utility, with other city departments, developers, public health officials, regulators, wholesale customers and retail customers. The utility's success depends upon it.

The utility has built numerous partnerships through the years and works to maintain these open lines of communication.



Attributes of Effective Utility Management

Product Quality

The responsibility spans across many sections of the Fort Worth utility – treatment operators, laboratory staff, field staff, and customer service representatives. Weekly water quality team meetings are held to discuss complaints received, sampling data and, if necessary, corrective actions implemented or to be implemented.

The utility sets internal goals for water quality parameters that are stricter than the regulatory requirements. These goals include parameters for chloramine levels leaving the plants, turbidity and pH.

Fort Worth has a corrosion control plan and a nitrification action plan. Both plans are to meet regulatory requirements and require quarterly testing and reporting to the Texas Commission on Environmental Quality. The utility actually monitors the parameters on a semi-monthly basis to ensure any deviations are quickly realized and appropriate corrective actions can be taken.

In 2016, the Fort Worth implemented a Nitrification Action Plan. This plan increases the monitoring of nitrite, ammonia, and chlorine residuals within the distribution system for the purpose of improving and maintaining a stable chloramine residual. Daily, weekly and monthly sampling provides prompt feedback in order to react to and optimize chemical feed systems and distribution system operations to ensure the nitrite and free ammonia levels are maintained within operational guidelines specified in the Nitrification Action Plan. The NAP illustrates stricter operational goals for achieving and maintaining lower levels of nitrite and free ammonia in the distribution system that are stricter than the state and federal regulatory requirements. The plan includes alert and action levels for each constituent.

In 2018, Fort Worth established corrosion

control triggers to assist with Lead and Copper requirements for optimal corrosion control. As a result, appropriate corrosion control treatment is maintained at all times to ensure public health is protected.

Water quality complaints have declined over the past five years from 451 in Fiscal Year 2014 to 188 in Fiscal Year 2018. The utility had a CT time violation in 2015, which was immediately corrected. Disciplinary action and revised standard operating procedures were implemented to address the situation. In 2014, two routine samples in north Fort Worth tested positive for total coliform. The next day additional sampling was conducted, but only five samples were pulled because one of these sampling sites was common to both sets of three samples. The Texas Commission on Environmental Quality issued a monitoring violation because two samples were not pulled from the common location. All of the samples tested negative for total coliforms. Laboratory procedures were modified. Water quality was not compromised.

Lead in drinking water has been a major issue in some parts of the country in recent years. Knowing EPA is working toward a proposed new rule, the utility decided to be proactive and implement a service line-inventory and lead replacement program. Staff are touching every meter in the system to determine pipe material on both sides. Approximately 1,200 city lead service lines and 16 customer lead service lines have been identified to date. The utility has a goal to eliminate all city-side lead service lines by the end of 2021. Communication with affected customers is a key part of this effort.

Customer Satisfaction

Fort Worth has various types of customers with various needs. Different customer segments include residential customers, industrial customers, commercial customers, developers, elected officials, regulators, wholesale customers (other communities) and consumers who are not directly billed for services.

A departmental reorganization in December 2017, created a Customer Care Division which includes all customer facing areas – water development, customer engagement, call center, billing, key accounts and wholesale services, meter services, pretreatment services, conservation and backflow. The reorganization’s purpose was to help move our organization forward so we can better meet growing customer expectations and continue to operate efficiently and effectively. This restructuring has facilitated communication coordination across groups that have interactions for different reasons with sometimes the same customer segments.

Numerous metrics are used to measure response times for the work groups listed above as well as for other departmental operations, such as field staff responses to sewer backups, leaks and fire hydrant repairs.

A recent change in call center hours was made to improve operations, after a “Lean” process project examined the call center hours. The change came out of a The customer service call center had been operating for 24-hours for the past 20 years. This allowed customers to contact the utility at any time for any type of account assistance or to report emergencies. Call volume levels did not support the need, as the vast majority of the almost 600,000 calls received each year were between 7 a.m. and 7 p.m. In October 2018, the change was phased in, with field operations dispatch handling after hour emergency calls. In Fiscal Year 2018, the call center met its service level goals 77 percent of the time. That has improved to more than 94 percent in the current fiscal year, and overtime costs were substantially reduced. The Customer Relationship Management system is used to log all customer contact with the call center so it is available to all representatives for future reference with the customer.

The Fort Worth water utility is committed to meeting customer needs, but to do so requires understanding how customers currently view the utility and what their needs are now and in the future. The utility uses two survey tools to gain insight: a utility commissioned survey of customers and the J.D. Power Water Utility

Residential Survey.

The utility conducted its last customer survey in 2018 and is committed to doing this every two years to be able to benchmark how it is meeting customer expectations and needs. Some specific results of the utility’s commissioned survey are:

- 75 percent were very satisfied or satisfied with the overall quality of water services provided by the City of Fort Worth;
- 77 percent were very satisfied or satisfied with the overall quality of sewer services provided by the City of Fort Worth;
- At least 78 percent who contacted customer service were satisfied with some aspect of their experience;
- 87 percent thought field staff “always” or “usually” acted professional and were courteous & polite; and
- 79 percent of customers rated the quality of service for ALL interactions as “excellent” or “good”.

As the utility prepares for selecting portal functionality to be used in the MyH2O program, customers were asked about preferred communication methods for both non-priority and priority events as well as functions they would like be able to complete online.

For priority notifications (main breaks, water outages, boil water advisories and street closures) email messages, text messages, door hangers and recorded phone calls ranked the highest. Less popular options were website, mobile applications, Facebook and Twitter.

For non-priority information, such as educational programs and events, e-mail messages and bill inserts ranked the highest, followed by door hangers and website. The less popular options were text messages, recorded phone calls, Facebook, a mobile application and Twitter.

Customers have a strong desire to be able to report more things online, such as a main break or leak (39 percent), a water quality concern (37 percent), a water outage (35 percent) or a sewer backup (31 percent). Also, 21 percent want to be able to request a billing investigation online. Customers

also want to be able to access more frequent water use information – 30 percent want monthly data and 29 percent want daily data. The utility is planning to incorporate functionality to do most of these things online through the MyH2O portal as it implements advanced metering technology.

The water utility monitors the results of the J.D. Power Water Utility Residential Customer Satisfaction Survey, which began quarterly sampling in March 2016 of the 89 U.S. water utilities serving 400,000 or more people. Four quarters (June, September, December, March) are compiled into the annual results. Texas is in the south region, which is the largest of the four regions with 32 water utilities.

Fort Worth is in the South Region, which reflects the highest customer service index scores of the four regions. There are six factors that make up the overall score, and Fort Worth scored the highest in the country in the customer service component. The utility has room to improve when it comes to communicating its efforts to protect the environment.

J.D. Powers also conducts a short wastewater survey in the same cities. Fort Worth ranked 4th in the south region and 6th out of all 89 wastewater utilities across the country.

The survey results are used by management to determine opportunities for improvement, and to develop ways to positively affect change. The business plan and key initiatives are reviewed and updated annually to incorporate these items.

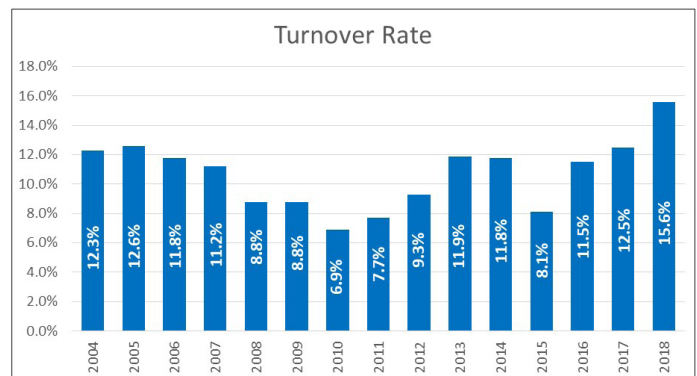
In-person feedback is obtained through the neighborhood design and pre-construction meetings held on every infrastructure project. Through the recently started monthly podcasts (H2OMG), feedback is solicited on the utility’s programs, projects, and community events. Also, customer comments are received on the utility’s social media platforms, which include separate Spanish-language Facebook and Twitter accounts. The Spanish-languages accounts are not mirror images of the English accounts, but have messaging targeted to that segment of customers.

An upgrade to the maintenance management system combined with deployment of iPhones to field crews has allowed contacting customers to provide estimated time of arrivals for work orders, such as sewer backups that are customer initiated. The response from customers about this notification has been extremely positive. As the meter services section converts to this work order management system, it will be able to offer the same customer service enhancements.

Historically, Fort Worth tracks and documents customer interactions, but has not tracked complaints per 1,000 customers. This fiscal year, the utility began tracking this. The utility will analyze both the data received, as well as the manner, method and categorization in collecting the data, to ensure consistent measurements. This will afford us the opportunity to affectively address and correct.

Employee and Leadership Development

Like many other utilities, Fort Worth Water has seen numerous long-tenured employees retire over that past decade, and this trend continues. 12 percent of the utility’s work force is eligible to retire today, and over the next five years the number is 24 percent. In addition, turnover rates are higher than desired.



Fort Worth took steps to address both these issues, in the 2017 reorganization by creating the organizational development section within the management services division.

The section is responsible for many functions

aimed at moving the utility's workforce to the next level. It oversees human resource functions and maintains the department's business performance plan and monthly key performance indicators.

The section facilitates an annual utility leadership conference where the next fiscal year's business performance plan is discussed and priority initiatives are added. It also identifies process improvements and provides assistance with the creation of standard operating procedures.

The organizational development section conducts skills assessments as an aid in identifying training gaps and encouraging deeper conversations between a supervisor and their staff.

A new employee orientation is being developed that will provide more detailed information to new employees specific to the Water Department. It will include maps of the water and wastewater service area, contact information for the human resource coordinators in each division, organizational charts, department history, etc.

Starting in October 2018 staff from the Organizational Development section worked with the MyH2O team to review future process maps related to the implementation of this new program. Many work sessions were held with the key stakeholders to look at and modify the process maps. System integrations, sources of governance and measures were also identified during these sessions.

A new training program for the department is being developed, which includes an assessment of the current training being provided followed by recommendations for additional training that is needed.

A training and development specialist was recently hired to complete these tasks as well provide guidance on a learning management system. The individual is working closely with the new environmental health and safety manager to more clearly define safety versus professional training and to improve how this data is tracked.

There is in-house training for water and

wastewater licenses, and these courses are offered at no cost to staff from our wholesale customers. The utility also pays for staff to attend classes and conferences in order to obtain or maintain licenses.

Tuition reimbursement is offered to encourage employees to obtain a degree. Incentive pay is available for positions requiring licenses.

Internships are in place with local community colleges and universities, and a new high school internship program is being developed in coordination with Fort Worth Independent School District's P-Tech Program.

The utility recently participated in the P-Tech Summer Bridge program, which is designed to get the students familiar with the industry partners and start learning about some of the opportunities available. The utility gave a safety presentation, demonstrated mechanics fixing a leak, demonstrated some electrical repairs, and provided an overview of the utility and the different career paths it offers.

The Water Department is providing guidance on curriculum for the students so when they graduate high school they can come to work for the Plant Operations Division and are prepared to be a productive employee. The utility will be providing tours, job shadowing and internship opportunities for the students that are interested in choosing this career pathway. During the school year, the utility will also give presentations to acquaint the students with the work done by the utility.

Nineteen utility employees have completed the city's Lean Leader training, with 16 being yellow belts and three achieving green belts.

To help fill the knowledge gap, the utility initiated a succession planning process. More than a dozen position assessments have been completed with long-tenured staff prior to their departure. There are plans to enhance and expand succession planning to additional job functions, because it helps build career ladders and encourages cross training and development.

The process consists of sessions with the person or people in key roles to document their work functions and processes, key contacts, network locations for stored data, etc. The process helps identify knowledge gaps where additional training is necessary (for promotional opportunities) or what processes may be transferred to other employees. After each session, the information is reviewed with the employee and their supervisor to ensure accuracy. The approach may vary depending on the situation and what is deemed necessary.

The information gathered is shared with employees that are interested in promotions or increasing their knowledge to identify where they have a lack of experience. The employees are encouraged to seek out the additional training in order to prepare them for the next step in their career.

When employees are retiring or leaving with short notice, the succession planning information was reviewed with managers and co-workers to go over what the employee was working on and if any standard operating procedures need to be created. Many SOPs exist to help new employees understand work tasks and process.

For employees who provided advance notice of retiring, there is a more detailed approach. For example, bi-weekly sessions are held with the employee and a large group of co-workers to go over any questions they have regarding the retiree's expertise in areas. If a successor has been identified, this information helps for training purposes; it serves as a guide and outline. When possible, job shadowing is encouraged for new employees who are replacing retiring employees.

Work is underway to develop a records management program for the utility that will classify the types of records used and the retention schedule that applies to each type. Existing procedures will be reviewed along with the guidelines for destruction and digitization of records.

A records administrator was brought on board in early 2019. Their role is to improve access to

documents and properly reduce the amount of records and information being maintained. The city's HR/payroll system is used to track employee training hours, but is dependent on employees entering the time as training and not regular hours. Efforts are underway to reinforce the need for differentiating training hours so an accurate record can be obtained. The average training hours per employee is about 8.1.

Standard Operating Procedures are available for various work tasks, and a new employee orientation tailored specifically for new water department employees is being developed.

Internships are in place with local community colleges and universities, and a new high school internship program is being developed in coordination with Fort Worth Independent School District. A newly hired training and development specialist is tasked with developing a training program geared toward professional development. Nineteen utility employees have completed the city's Lean Leader training, with 16 being yellow belts and three achieving green belts.

The Plant Operations Division has two positions that have automatic reclassifications outlining a career path: Water Systems Technician I, II and Senior and Water Systems Mechanic I and II. When employees are hired they are aware of the qualifications to be reclassified to the next promotional step. This program is being expanded this year to include field service representatives and engineering technicians.

In addition, the utility encourages and supports involvement in competitions conducted at the state water conference. Teams from the utility have participated in Top-Ops, Pipe Tapping and Operations Challenge. Some have earned the right to represent the state at AWWA or WEF competitions. These activities have a positive impact on employee morale and pride in their work.

Worker compensation claims for the past five years have averaged 107 with a high of 120 in 2015 and a low of 91 in 2017. There is ongoing safety training for all utility employees, and there

is a safety bonus incentive paid on an annual basis. To earn the bonus, employees must complete the required training and have no accidents during the year. Because safety training needs vary widely across the utility based on job function, historically, training has been decentralized and handled within the various divisions. This year a n occupational health and safety manager position was added to improve consistency and oversight across the utility.

Fort Worth is a diverse community, and the city has an employee Diversity and Inclusion Committee, which plans and facilitates the city’s Diversity Matters initiative. This initiative includes planning and conducting monthly activities and events to help improve employee cultural awareness by highlighting and addressing issues related, but not limited to, race, ethnicity, culture, age, gender, sexual orientation, gender identity, ability, national origin, veteran status, social economic class, religion, and professional status. The committee also makes recommendations related to diversity and inclusion in the workforce to city leadership through the Human Relations Commission.

The city has made diversity and inclusion a priority is creating a diversity and inclusion department. It plans to have a chief diversity officer on board by the end of the year. Every city employee will participate in diversity and inclusion training within the next year.

Water staff has reached out to Hispanic organizations to gain knowledge and tips on how to address diversity in the workplace. The city also has requirements for minority and women-owned business involvement in most contracts, including capital improvement design and construction work.

Operational Optimization

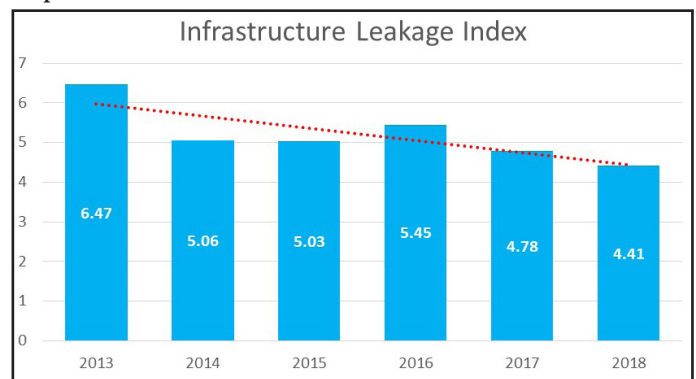
Fort Worth is continually striving to enhance its operations in ways that are cost effective, sustainable and reliable.

With more than 3,565 miles of water distribution

mains in the system, operations can be challenging from maintaining water quality to managing water loss. Standard operating procedures are maintained to educate new employees and as refreshers for all employees. A comprehensive Water Distribution System Manual is maintained and updated regularly to reflect changes to the distribution system, including tanks and pump stations. It has detailed information on each type of pump, valve used with the pumps, pressure planes, storage tank sizes, locations and associated pressure plane, piping capacity, operational protocols and much more.

With five drinking water treatment plants, five high service pump stations and 21 booster pump stations, the utility has the ability to move water around should a failure occur in one facility. Over the past decade, a new water treatment plant and three booster pumps stations have been added to improve reliability and redundancy. The treatment plants are all automated and are able to operate around the clock with just one licensed operator on duty at all times. The utility is implementing Water Information Management System software to interface with the SCADA system in order to generate operating and regulatory reports.

In 2006, all Texas retail public water utilities were required for the first time to file a water loss audit report and then to do so once every five years. Fort Worth decided to perform the audit annually to monitor the level of water loss. In 2013, the Texas Legislature made it an annual requirement to file the reports and notify customers of the results. Fort Worth has seen its infrastructure leak index improve from 6.47 in 2013 to 4.41 in 2018.



As Fort Worth rolls out the MyH2O program this year, the data generated through the advanced

metering infrastructure will be invaluable in helping further reduce water loss and optimize leak detection operations.

The separate water and wastewater SCADA systems provide real-time data that is used to operate the facilities efficiently and effectively. The wastewater SCADA was upgraded in 2012, and the utility is in the selection process for updating the water SCADA system.

In 2011, after experiencing increased line collapses in large-diameter pipes (24-inches and larger), Fort Worth Water developed the Interceptor Condition Assessment Program. ICAP combines three technologies to perform field condition assessments and deliver a condition assessment rating that measures Remaining Useful Life. High-definition TV inspection is the most advanced method for capturing video images. Sonar is used to inspect the pipe below the water surface. 3-D laser inspection uses laser technology to create a three-dimensional model of the pipe wall above the water flow line.

The technologies are mounted on a robotic system that is pulled through the interceptors. Fort Worth Water was the first U.S. utility to use the technologies together to pro-actively assess and rank the condition of large-diameter pipes and develop a predictive maintenance program. Now other utilities in Texas and the country are implementing the program. For the ICAP program, Fort Worth was recognized with a 2016 Texas Environmental Excellence Award from the Texas Commission on Environmental Quality.

Fort Worth recently completed the next step by developing a risk score for all 3,508 miles of wastewater lines, using ICAP data and in-house data on smaller lines. The risk score takes into account condition and criticality, providing enhanced asset understanding and enabling more effective prioritization of projects. The criticality is based on access issues, location impact, customers served and redundancy available. At the same time, a similar program for water lines was developed – the Water Efficiency and Condition Assessment Program. While the same type of condition data is unavailable for water lines, the condition is based

on several factors – age, water pressure, pipe material and work order history.

Condition assessment findings and risk scores are readily available through a layer in the GIS system. The findings provide needed information during development reviews and planning for both the operating and capital budgets. The data provide the business case justification for renewal/replacement projects. Operational staff and the capital improvement planning groups meet regularly to discuss the operational needs that need to be addressed in the Capital Improvements Plan, which is updated annually.

The laboratory information management systems was replaced with a more robust system in 2010. The system electronically submits reports to the state regulatory agency for certain contaminant testing. This year the LIMS was interfaced with the Pretreatment Section, eliminating paper copies of reports on industry wastewater monitoring. The Fort Worth water laboratory also serves as a contract lab for other cities. This year's goal is to activate a web portal so customers can access their data and data history electronically. Also, laboratory samplers are testing the use of tablets to enter quality parameters they take in the field. That data is transmitted in real time back to the LIMS system. This will allow the samplers to spend more time in the field and less time in the office re-entering field measurements.

Resource recovery and waste minimization are part of the utility's culture as it pertains to protecting the environment. The city has a paper recycling program for all its facilities.

The utility has a comprehensive energy strategy that includes several projects to reduce energy consumption. Projects include transitioning to LED lighting and pump and motor upgrades throughout the water treatment and distribution system, as well as large-scale electrical improvements. Operational data initiatives are distributed throughout the staff to strategically select pumps to meet current demands with minimal power consumption. Pump and motor flow testing is performed to calculate efficiency and then plan for replacement of inefficient units.

In 2018, the utility completed a multi-year Energy Savings Performance Contract for the Village Creek Water Reclamation Facility. Through the contract, efficiency improvements were made to anaerobic digesters, aeration basins and gas turbines. The heat recovery system was expanded and a steam generator were added along with steam blowers. The steam blowers help reduce the use of the high-energy demand electric blowers.

The facility has generated parts of its own electrical demands since 1960 through the conversion of digester gas into electricity, supplementing that with the purchase of biogas from a nearby landfill.

The landfill gas is no longer available to the utility. Recently, one of the two 5.2 megawatt gas turbines was converted to run on only natural gas and the city is negotiating a contract to sell all of the digester gas by-product to a company who will clean it and sell it back to the pipeline. In return the city will receive royalty payments.

This summer the utility will complete a coating project on one of the high service pumps at its oldest treatment plant. This internal coating system for centrifugal pumps is designed to protect the interior from corrosion and improve pump efficiency by reducing hydraulic losses.

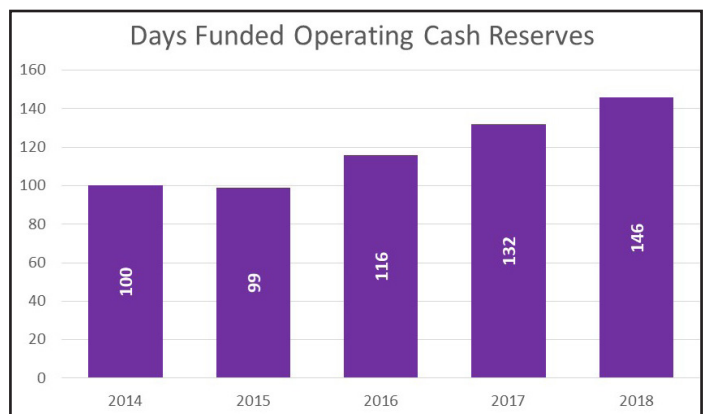
The Field Operations Division has used Maximo for work management since 2005. It was upgraded in June 2018, and now field staff have the ability to use tablets and iPhones to access record drawings through a GIS link. Also, field crews now can accurately relate the work order to a specific asset instead of a generic address. Maximo was extended to the water and wastewater treatment facilities in 2015 and 2016, and is in the process of being extended to the meters services section. The use of the software allows the utility to track costs associated with specific assets to determine life-cycle costs and determine when repair or replacement is the most cost-effective option.

Financial Viability

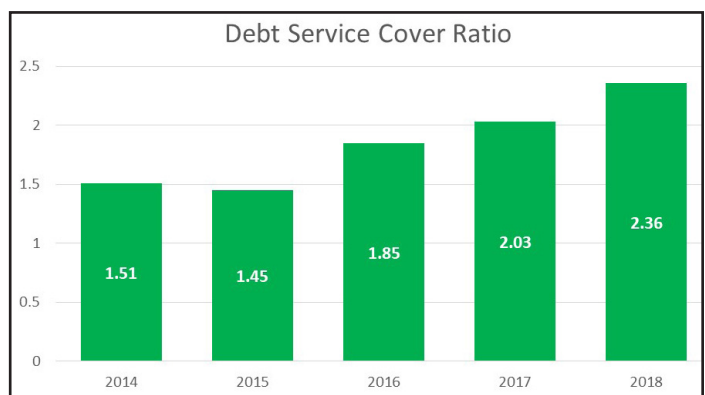
Maintaining a strong financial position is an imperative for utility’s leadership. Projected income versus expenditures are monitored on a monthly basis, with re-estimates calculated monthly from January to September.

The city has strong financial policies regarding the level of reserves and debt service coverage. The city’s leadership strives to increase pay-as-you-go capital funding each year in the general fund and the water and sewer fund.

In Fiscal Year 2015, the city adopted a new financial management policy that included two metrics instead on one, and set new thresholds for days cash on hand and working capital. This raised the required reserve level for the utility.



The current reserve policy requires between 100 and 150 days cash on hand and a working capital threshold of 25 percent of ongoing operating expenses plus 25 percent of the following year’s debt service payments. In the past five years, the



utility's days cash on hand has increased from 100 to 146 days and exceeds the Working Capital reserve requirement.

In addition to the days cash on hand metric, the utility has focused on strengthening its Debt Service Coverage, increasing it from 1.51 in FY14 to 2.36x in FY18. Strong financial operations and management resulting in increased liquidity as well as small annual rate increases have combined to improve the utility's bond rating by Standard & Poor's from AA to AA+. Moody's and Fitch ratings have remained at Aa1 and AA, respectively, over the past five years. All outlooks are stable.

Bond Ratings	
• Moody's	Aa1
• Fitch	AA
• Standard & Poor's	AA+

The vast majority of the utility's revenue (92 percent) is generated through rates, with 73 percent from retail customers and 19 percent from wholesale customers. Other sources are impact fees, taps and extensions, and miscellaneous revenue. Staff continually review non-rate revenues to ensure cost recovery and minimize rate increases.

Impact fees are charged to new development to offset some of the cost associated with it, but ratepayers still subsidize new development. The state prescribes the process for calculating impact fees and the amount that can be recovered. When revised fees took effect in 2017, the City Council did increase the percentage collected of the maximum allowable rate from 35 percent to 40 percent through a three-year phased in approach. Impact fees are recalculated at least every five years in accordance with Texas law.

The utility has an annual rate planning process which includes a stakeholder group, comprised of representatives of all retail customer classes. The group is presented the proposed budget and the cost of service calculations. The stakeholders provide feedback on proposed changes to the rate structure, such as changes to the tiers used in residential or irrigation rates. The group is to ensure there is equity in how rates are assessed.

Long-range and medium-range capital planning are collaborative processes which include all divisions of the utility, the city's planning and development department, water and wastewater wholesale customers, the chambers of commerce and developer committees. Regular stakeholder meetings were held to receive input.

In the past, the process has focused on new growth. One of the process improvements implemented is to include redevelopment, risk-based assessment data and collaboration with other city departments that have CIPs. This mid-range assessment on growth and redevelopment is used to determine future needs in the utility's CIP. These proposed capital plan is reassessed annually to determine if any projects need to be accelerated or deferred based on growth and risk factors. The financial staff evaluates how much new debt the utility is able to support and works with the planning staff as the 5-year CIP is updated annually for adoption by the City Council.

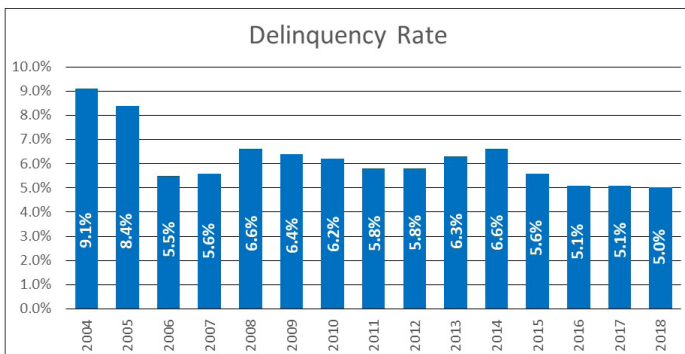
During the evaluation process, utility staff matches various funding sources to projects in order to maximize funding and limit rate impacts. Funding sources include pay-as-you-go cash, commercial paper, long-term revenue bonds, state revolving loan funds, impact fees and other sources. In this way, staff balances the costs borne by current and future system users.

Fort Worth, like many other utilities, has customers who are elderly, disabled, low income, newly employed, or who experience financial difficulties that create challenges in paying their water utility bill.

The utility works with customers who are experiencing financial difficulties. The utility may grant payment extensions in an effort to prevent an interruption of service. Payment plans are also established to assist customers who suffer a hardship, or for customers who incur high water bills due to a plumbing issue. Customers must pay their current month's bills in addition to the agreed upon Payment Plan amount on, or before, the established due date each month. Payment Plan amounts and term are dependent upon the delinquent amount total and a realistic time frame

commitment from the customer. Plan amounts can start as low as \$25 per month and extend as long as 24 months if necessary.

Fort Worth also has a Utility Bill Assistance Program to assist the disadvantaged and the program is funded completely by donations. The funding relies on donations from customers who may do so with either a one-time donation or a recurring monthly donation amount. Donated funds are collected by the utility, and the Neighborhood Services Department determines eligibility and administers the funds. Customers must have income at or below 150 percent of the Federal Poverty Income Guidelines to qualify for the one-time assistance. Upon approval, funds will be provided for up to two water bill payments, not to exceed the maximum program allocation of \$500. Additionally, upon approval, assistance for plumbing repairs can be obtained up to a maximum of \$3,000.



Often people who cannot afford to repair leaks, fall into a vicious cycle of higher and higher water bills that cannot be paid. Fort Worth is developing a SmartRepair Plumbing Program to help in these situations. The purpose is free up the donated funds for bill payment assistance. These budgeted operating funds would be to assist low income customers who report a water leak or request plumbing repairs and meet all program criteria. There would be maximum expenditure limit per household.

Infrastructure Strategy and Performance

Fort Worth is in the process of developing a

comprehensive asset management program. While the utility has components of asset management in place, it has not had a comprehensive program and is striving to implement one. The utility has completed an asset management maturity assessment, which involved upper management, supervisors and tactical staff.

The utility’s Interceptor Condition Assessment Program and the Water Efficiency Condition Assessment Program are proactive approaches to obtaining data and assigning risk scores to every segment of water and wastewater pipe in the system. This information is used for identifying and prioritizing capital expenditures related to rehabilitation and renewal of raw water transmission mains, water distribution mains and wastewater collection pipelines.

The ultimate goal is to reduce the occurrence of costly large diameter water and wastewater pipe failures, reduce sanitary sewer overflows, improve water quality and supply, and help in the conservation the water.

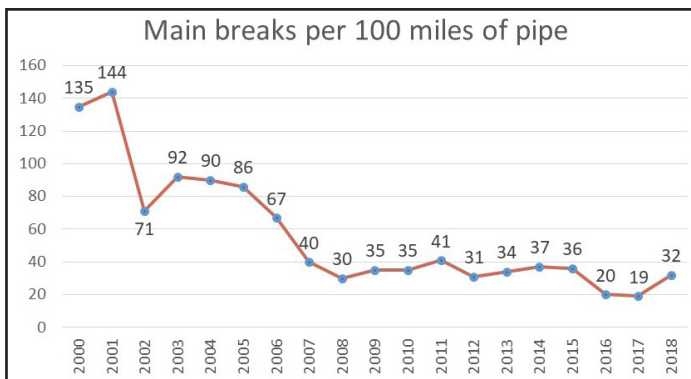
The utility is the process of conducting an inventory of its service line materials as part of an effort to also get GPS coordinates on every meter, which now total more than 263,000. The project started in April 2016 and is 80 percent complete. It is being done entirely with in-house meter services staff. About 1,200 city-side lead services lines have been identified, and only 16 customer-side lead service lines. None of the locations have lead on both sides of the meter. The goal is to replace all the city-side lead service lines by the end of 2021. About 800 have been replaced or are currently scheduled for replacement.

Currently, a process is in place for capital planning based on the risk assessment and other available data and information, including robust master planning activities. This process helps in formalizing a strategic process for the procurement, maintenance and disposal of assets.

The utility’s business performance plan tracks several key performance indicators, such as number of main breaks and leaks per 100 miles of pipe, SSOs per 100 miles of pipe and

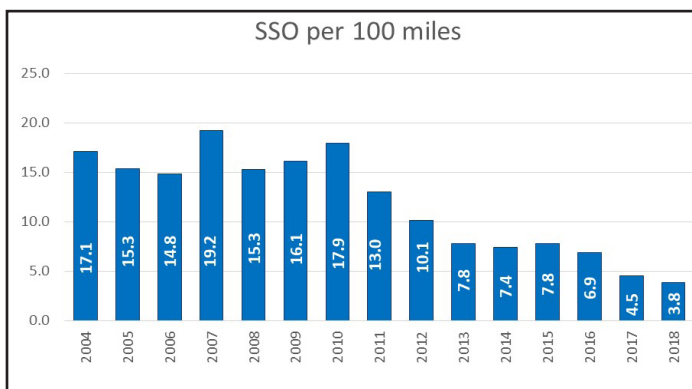
the infrastructure leak index. An annual water loss report is submitted to the Texas Water Development Board. The work order management system tracks the expenditures related to each asset so this information can be used to know actual life cycle costs and aid in decision-making.

Addressing leaks and water loss is a primary focus. The utility pro-actively surveys about 1.3 million linear feet of pipe each year using acoustical leak detection equipment. It also conducts reactive surveys, which can total more than 2 million linear feet a year.



The majority of the main breaks occur in older cast iron pipe. While the utility has not used the material since the 1970s, it still comprises a substantial part of the pipe material in the system.

The utility participates in AWWA Benchmarking to determine how it fairs compared to other water sector utilities. Fort Worth is tracking corrective work orders versus preventive maintenance work orders for each of the treatment plants, storage facilities, pump stations and lift stations.



The 5-year capital plan is reviewed and updated annually. Routine maintenance activities are

discussed during the annual operating budget cycle. The water director has challenged the Capital Project Delivery Division to get projects designed and to construction on a timely basis. The deputy director for infrastructure services, a new and recently filled position, is tasked with improving project delivery.

CIP Appropriated vs. Estimated			
Fiscal Year	Estimated	Appropriated	%
2014	\$200,257,305	\$107,818,424	54%
2015	\$178,011,867	\$94,119,754	53%
2016	\$190,295,672	\$153,148,239	80%
2017	\$169,090,813	\$114,687,019	68%
2018	\$276,564,968	\$187,320,900	68%

During the planning cycle, Fort Worth coordinates with the city’s planning and development department to review any new development and redevelopment studies, as well as discuss population projections.

The utility looks at the projected demands that are correlated to concept plats and preliminary plats. Additionally, the utility assesses the pre-development inquiries to determine the growth pattern and trends regarding the type of and locations for possible development. The utility also engages wholesale customers to obtain their growth needs. Design criteria and field monitoring data are assessed to determine the appropriate peaking factors.

Enterprise Resiliency

Resiliency is a primary focus for the Fort Worth water utility, whether it is in the treatment and distribution systems or billing system.

Having redundancy is one way to address resiliency. Whether it is an extra pump at a pump station or two call center locations, with another site designated as an emergency back-up location. Water treatment plants have dual electrical feeds from different substations. The continuity of operations plan for the billing system is tested annually.

Fort Worth has the ability to move water around the city from any of its five water treatment plants. Treatment capacity is at 500 million gallons a day with peak day demands at 368 MGD in 2012.

The utility has made several infrastructure improvements in the past decade to improve the system's resiliency and reliability, including a new water treatment plant and pump stations, and adding generators to lift stations.

Fort Worth Water works closely with the city's emergency management office when problems arise that have substantial impacts, such as loss of pressure requiring a boil water notice. In 2004, all water utility employees were NIMS certified, but there has been substantial staffing changes since then. The utility is planning to re-initiate NIMS training, starting with key personnel.

Relationships have been built with county health officials and semi-annual meetings are held to discuss emerging issues on both sides and to maintain the relationship. Other water utilities in the county are invited to attend. The city is a member of TXWARN.

The utility has and regularly updates its Emergency Response Plan. The plan addresses a wide variety of situations from main breaks, collection line failures, electrical outages, tornadoes to pressure losses. Each facility has site-specific plans. Federally required risk management plans are maintained, exercised and regularly updated for three treatment facilities that meet the requirements.

Water management plans initiate various water use restrictions when triggers are met because of drought or a short-term issue such as a major transmission main rupture or power failure.

A Department of Homeland Security cyber security assessment was done. The report includes recommendations relating to water utility specific systems maintained by its staff, as well as citywide systems (HR, financial, purchasing) maintained by the city's IT department.

There is an operation and maintenance plan for

the spillway dam at Lake Worth, which includes a safety plan. This is reviewed and exercised annually. After significant long-term rain events that create water flowing over the dam for an extended time, an engineering firm inspects it. The state conducts an inspection about every five years.

All treatment facilities and the field operations yard are restricted-access sites. Access is also restricted to some office areas for worker safety. Monthly safety meetings are conducted for all employees. The training varies based on the work environment. The department recently added a department-wide safety manager to coordinate the safety programs of each division.

The utility is conducting the risk and resiliency assessment as required by America's Water Infrastructure Act and will then update all its emergency response plans as well as its crisis communication plan.

Community Sustainability

Fort Worth takes its responsibility to protect and be good stewards of the environment seriously. As the first major discharger into the Trinity River basin, the utility's sole water reclamation facility has a stringent discharge permit. It received its 28th consecutive Platinum Peak Performance Award for no permit violations in 2018 from the National Association of Clean Water Agencies. The facility is permitted at 166 MGD.

To handle the city's continued growth, it filed a permit application for a second water reclamation facility in 2018. The city involved community stakeholders in the site selection process in 2009 to 2010. That process resulted in the utility committing to several community livability criteria – odor control, noise abatement, appropriate focused lighting, perimeter fencing and architectural enhancements. These factors will be included in the design phase.

The city owns one water supply lake – Lake Worth, but the water rights were transferred to TRWD

decades ago. Management responsibilities for the watershed are shared by the utility and other city departments – planning and development, parks and code compliance.

Lake Worth developed over the past 105 years with septic systems serving properties because of no access to city wastewater services. The utility has an ongoing effort to eliminate the septic systems. Over the past 15 years, the utility has coordinated with the landowners and leaseholders to extend wastewater lines, mostly low pressure wastewater lines with grinder pumps for each property. The utility maintains the grinder pumps. Water lines have also been extended to many of the areas.

Fort Worth encourages its employees to give back to the community. While many employees are involved in their own volunteer efforts, there are some city-organized activities, including support for United Way.

A food drive is held in the summer to support the Tarrant Area Food Bank. At Christmas, two drives are held to collect unwrapped gifts. Cowboy Santas provides toys to children, ages 12 and under, from low-income Tarrant County families. Silver Stars is a holiday program for homebound or isolated seniors that provides care packages. Employees participate in the annual American Heart Association walk, which is near and dear to the utility because one employee is a transplant recipient.

The utility partnered with Fort Worth Independent School District to adopt an elementary school. The partnership efforts have included many programs over the years, including working on reading and writing ability, spelling bees, science fairs and programs to bolster school attendance.

Water Resource Sustainability

While Tarrant Regional Water District is contractually obligated to ensure Fort Worth has an adequate water supply, the utility recognizes it has a significant role to play in extending the

life of existing supplies as much as possible. This is the most cost-effective option for rate-payers, and part of the utility's obligation to protect the environment.

Since 2005, Fort Worth and TRWD's other major customers, have coordinated drought plans so the area is on the same page when water supply levels drop. In 2014, that drought plan coordination effort was extended across the Dallas-Fort Worth region by including all the major water suppliers. The region is all one media market, so having common actions in each stage of the plan makes it easier to obtain compliance. By contract, all Fort Worth wholesale customers must adopt the same drought measures as Fort Worth.

While the drought plan only comes into play when certain triggers are met, Fort Worth has a strong conservation program aimed at extending the life of existing supplies, even when supply is plentiful. In 2006, the City Council enacted time of day watering restrictions to reduce water lost to evaporation. In 2014, the City Council limited outdoor watering to twice a week on assigned days as a conservation measure that is in effect all the time, year round.

The SmartFlush Program has replaced more than 44,600 high-flow toilets with WaterSense labeled ultra-high efficiency toilets since its inception in 2009. This has resulted in an estimated 556 million gallons saved. Because of the climate, water use can escalate in the spring and summer as residents douse their lawns. For the past 15 to 20 years, irrigation systems are a standard part of all new home construction. The problem is most people have no idea how to operate the systems. The utility, in partnership with TRWD, offers free irrigation system check-ups to customers.

Outreach and education efforts are also a major part of the conservation effort. Semi-annual, half-day Yard Smart seminars with multiple presenters and topics are extremely popular. In partnership with Texas AgriLife, free seminars related to landscapes are offered monthly from March through November.

Fort Worth's gallons per capita per day dropped from 233 in 2000 to 162 in 2018. Because weather is a major factor in water use, the utility looks at GPCD as a five year-rolling average to get a better indication of overall trends and account for the highs and lows. The current rolling 5-year GPCD is 159.

Because of the decline in GPCD, the utility's water and wastewater design criteria were recently updated to reflect the lower numbers. The updated design criteria now have categories of redevelopment density demands instead of using generic per acre projections.

In 2007, Fort Worth completed a reclaimed water master plan, which identified five possible areas of the city for reclaimed water systems. In 2012, an 11.5 mile pipeline and a 12 million-gallons-a-day pump station began providing reclaimed water to two cities and DFW Airport. The cities use the water for irrigation, while the airport uses the water for irrigation and cooling towers.

Developers on the city's west side have expressed interest in using reclaimed water from a planned new water reclamation facility. That facility is in the permitting process. The goal is to have the treatment facility operational online in 2026. The updated design criteria include specifications for reclaimed water systems.

Texas has a prescribed long-range water supply planning process that divides the state into 16 planning regions and is overseen by the Texas Water Development Board. Fort Worth is in Region C and has a seat on the planning committee. Projects must be specified in the regional plan, in order to qualify for state funding.

The utility works with the city's urban forestry group to promote native plants to be on the City's approved list. There are future reclaimed water projects in the regional water plan. A reclaimed water design criteria section was added to the recently updated design criteria manual.

Stakeholder Understanding and Support

The utility has actively sought customer input in many ways for many years. In 1994, a Retail Rate Structure Stakeholder Advisory Group was formed. The utility convenes the group annually to review the rate setting process and provide feedback on the proposed rate changes, such as adding or modifying tiers for the residential or irrigation rate structures, or adjusting the ratio of income from fixed charges. All customer classes are represented on the group – residential, commercial, industrial, irrigation – to ensure the proposed rates are equitable to all. A report is generated and posted online regarding the recommended rate changes and the factors impacting rates. The public is invited to provide comments to the water director, prior to the rates being considered by the City Council. The availability of the report is disseminated using the utility's social media accounts, the news media and city communication channels to neighborhood leaders and individuals who have signed up to receive reports.

When conservation became a bigger focus for the utility around the turn of the century, a similar stakeholder group was created to help the utility understand the community's sentiments regarding the types of measures and programs that should be implemented.

Stakeholder groups are convened on an ad hoc basis when necessary. In 2009, Fort Worth convened a stakeholder group to provide feedback during the site selection for a new wastewater treatment plant. When the City Council was considering outsourcing the operation of the utility in 2013, it formed a Task Force representing various segments of the community to dive into what would be required, what the implications would be and the level of interest from other parties in assuming operations. The end result was a finding the utility was well managed, and should remain operated by the city.

One of the biggest impacts to customers is from construction projects. The city has a detailed process for outreach and obtaining input from

businesses and citizens when projects affect their neighborhood. The outreach occurs at several points including during design and prior to actual construction starting. Website information details projects and provides points of contact.

Based on feedback from customer satisfaction surveys, the utility spent 2018 planning a “re-branding” campaign, Water Makes It Possible. This campaign focuses on relaying what the utility staff do in their everyday jobs and the connection that people have every day to water. While water professionals know that the city would shut down completely if we didn’t have water, sometimes our customers need a reminder as so they don’t take it for granted.

Since the inception of the consumer confidence reports, Fort Worth’s philosophy has been to make the document attractive, and include information about other things happening in the utility.

For decades Fort Worth has provided a variety of education based programs to all ages. There are semi-annual WaterSmart Seminars focusing on gardening and landscaping practices, elementary school programs, middle and high school career day programs, Takeback Meds events and more. Currently we offer more than 10 different programs both as a utility and in joint partnerships with other city departments. We make sure we provide programs to a variety of populations, ages, and customers.

In addition, the utility maintains regular communication with its wholesale customers. By contract, semi-annual meetings are held. In addition, Fort Worth has led workshops on specific topics, such as regulatory changes, to help these customers understand the changes and the impacts to their operations.

Semi-annual meetings are held with public health officials in Tarrant County. In 2018, the utility began meeting with Denton County public health officials, and efforts are underway to expand this to the other counties with the water and wastewater system. These meeting are organized by Fort Worth, but include other water systems in the county. Having these relationships before a crisis strikes is essential.

The utility conducted a customer satisfaction survey in 2018.

The bottom line results are:

- Customers are very satisfied with water and sewer services provided by the City of Fort Worth;
- Customers gave high ratings to Fort Worth Water’s customer service and field staff;
- Customers are generally satisfied with the billing process; and
- Communication with customers is positive, but there is room for improvement.

The utility uses numerous tools to communicate with customers, including traditional bill inserts and bill messages, the city’s electronic newsletters, public meetings on construction projects, booths at community events, the news media and social media.

More than 30 percent of Fort Worth’s population is Hispanic. The utility strives to create all its materials in both English and Spanish, and has dedicated Spanish-language social media sites. The Spanish-languages accounts are not mirror images of the English accounts, but have messaging targeted to that segment of customers.