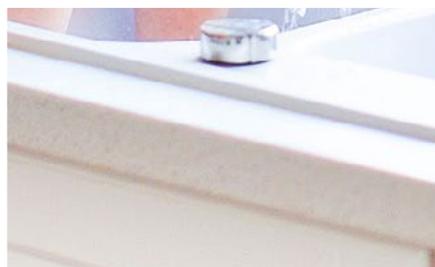


# Water Use of Texas Water Utilities



**2019  
BIENNIAL REPORT**



**86TH  
LEGISLATIVE  
SESSION**

# **Water Use of Texas Water Utilities**

*Third Biennial Report to the Texas Legislature*

**Peter Lake, Chairman**

**Kathleen Jackson, Member**

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January 1, 2019

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# 1 Executive Summary

In 2011, the 82nd Texas Legislature enacted Senate Bill 181, which revised the Texas Water Code §16.403 and §16.404 and directed the Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality (TCEQ) to develop a uniform method for calculating water use and a related reporting program for municipalities and water utilities with more than 3,300 connections. The measure also required submission of a legislative report regarding statewide water usage by water utilities. In response to that legislation, the TWDB and TCEQ, in conjunction with the Water Conservation Advisory Council, developed *Guidance and Methodology for Reporting on Water Conservation and Water Use* for water utilities and the public (<http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf>). The Guidance document sets out the necessary methods for calculating uniform water use. Water utilities are expected to use the methods prescribed in the Guidance document when they respond to the TWDB's Water Use Survey, an annual survey conducted by the TWDB that requests and collects water use data for the calendar year.

From the Water Use Survey 2017 reporting year, nearly all community public water systems in the state, 381 water utilities served more than 3,300 customer connections. Significant findings include the following:

- Nearly two-thirds of these 381 utilities were municipality-owned, although all types of ownership were represented by at least one utility.
- About 80 percent of the water utilities reported water use by the various customer sectors. The fact that some water utilities did not report by various customer sectors was mostly because they did not report single-family and multifamily sectors separately for residential water use.
- The share of the water volume that can be associated with customer sectors increased from an average of 70 percent to 80 percent from 2012 to 2017, therefore improving the understanding of how water is being used.
- On average, more than half of metered municipal water is delivered to single-family and multifamily residential customers.
- In general, as utilities become larger, the relative percentage of their metered water delivered to residential sectors decreases, and deliveries to non-residential sectors increase. The utilities were analyzed in four size categories; in the smallest category, residential sectors averaged 61 percent of total deliveries, while in the largest, an average of 35 percent of the deliveries went to residential connections.

This report finds that the pattern and volume of utility water usage can vary significantly between utilities, but there also appear to be commonalities. More utilities are making progress in being able to categorize the sectors where they deliver water. With this knowledge, water utilities are better able to select the most appropriate conservation strategies, measure their implementation, identify areas of further potential water savings, and plan for long-term needs.

## 2 Introduction

As documented in regional and state water plans, planning for the state's water supply is essential to avoid negative economic impacts and ensure the health and safety of the residents of Texas. Of all the identified strategies to ensure future water supply, conservation is often the least expensive. For Texas water utilities to develop effective programs to save water, they must have a comprehensive understanding of how that water is used. Such understanding requires measuring water use and interpreting the meaning of those metrics. That necessary understanding is the basis of Texas Water Code §16.403 and §16.404 and this biennial report (see Appendix A for a description of Texas Water Code §16.403 and §16.404).

### *Purpose of Report*

As required by Texas Water Code §16.403(e), this report provides the most recent data relating to statewide water use in residential, industrial, agricultural, commercial, and institutional sectors. Also reported is the most recent data relating to data collection and reporting programs for municipalities and utilities with more than 3,300 connections. Such data collection is accomplished through TWDB's annual water use survey and the reporting program through the development of water use estimates (<http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/index.asp>).

Sector-based reporting, the means to report how much water was used by various customer sectors, can be highly beneficial to water providers by providing more specific information regarding customers and their usage. When utility water use data is limited to the total volume of water diverted and the population served, total gallons per capita per day is the default metric often used to evaluate performance. This can be misleading, however, because of highly variable water use profiles. It is important to keep in mind that the more detailed the information obtained per water use sector, the greater the understanding of how water is being used and where opportunities for conservation exist.

Detailed information about amounts of water delivered to the different customer sectors can be used by a utility for internal evaluation purposes and as a planning tool in evaluating its own

conservation programs and system needs. In addition, such detailed information allows the utility to develop better targets and goals to be included in conservation plans. Similarly, state planning efforts can benefit from higher resolution, sector-based water data that improves understanding of water use and conservation opportunities for various types of water use throughout the state.

### *Ability for Water Utilities to Report*

It is very important for water utilities to maintain and collect data relating to water use, population, and conservation plan implementation because that information is critical in planning for long-term needs. Over time, utilities can monitor trends in residential, industrial, commercial, institutional, and agricultural use to discover any long-term reduction brought about by the implementation of various programs.

The classification of customer accounts and the reporting of such information take time for the utility to prepare. The Texas Legislature and water professionals recognize that many utilities' customer accounting and billing systems may not be able to categorize their customers and their water use. Because of the possible difficulties in reporting water use by the specified categories, Texas Water Code §16.404 specifies that the TCEQ may not adopt a rule requiring an entity to report data that is more detailed than a utility's existing billing system is able to produce directly. The TCEQ, however, may require that billing systems purchased after September 1, 2011, be capable of reporting such detailed information.

### *Data Challenges*

The overall entity response rate in the 2017 TWDB Water Use Survey was 80 percent;<sup>1</sup> however, some utilities respond one year but not the next.<sup>2</sup> Because self-reported data from the surveys is used to prepare this report, analyzing changes over time becomes problematic when utilities do not consistently report their annual water use.

Because sector-based water use reporting could be difficult and burdensome for smaller water utilities due to limited resources, this report uses the connection threshold of 3,300, representing a population of roughly more than 10,000 persons. From the 2017 Water Use Survey, 381 water utilities served more than 3,300 customer connections. From the 2012-2017 Water Use Surveys, about 70 percent of the water utilities serving more than 3,300 customer

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<sup>1</sup> Volumetrically, the response rate represents roughly 90 percent of the estimated statewide water use.

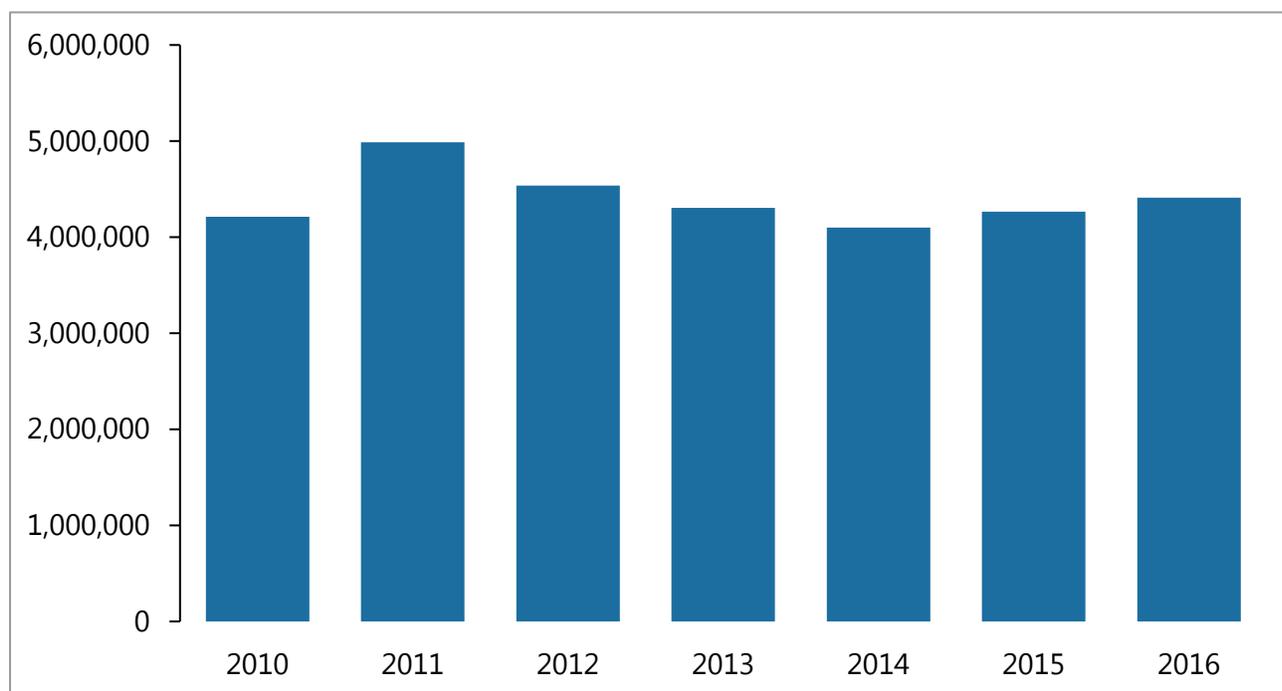
<sup>2</sup> Utilities that do not submit their annual Water Use Survey are not eligible for TWDB funding or water right permits from the TCEQ.

connections consistently reported water use by the various customer sectors for all years. Those utilities that did not consistently report by various customer sectors were because single-family and multifamily sectors were not separated for residential water use reporting.

### 3 Estimated Statewide Municipal Water Use

Water use can vary significantly from year to year depending on weather. For that reason, it is beneficial to look at long-term trends. In 1999, reporting total water use data through the Water Use Survey became mandatory for water utilities, greatly increasing the reliability of water use data around the state. Statewide municipal water use "all time" peak was during the drought in 2011 (Figure 1).<sup>3</sup> Thereafter, statewide municipal water use declined to 2014 as the drought receded, but then increased slightly in recent years.

**Figure 1 – Statewide municipal water use over time** (in acre-feet per year)



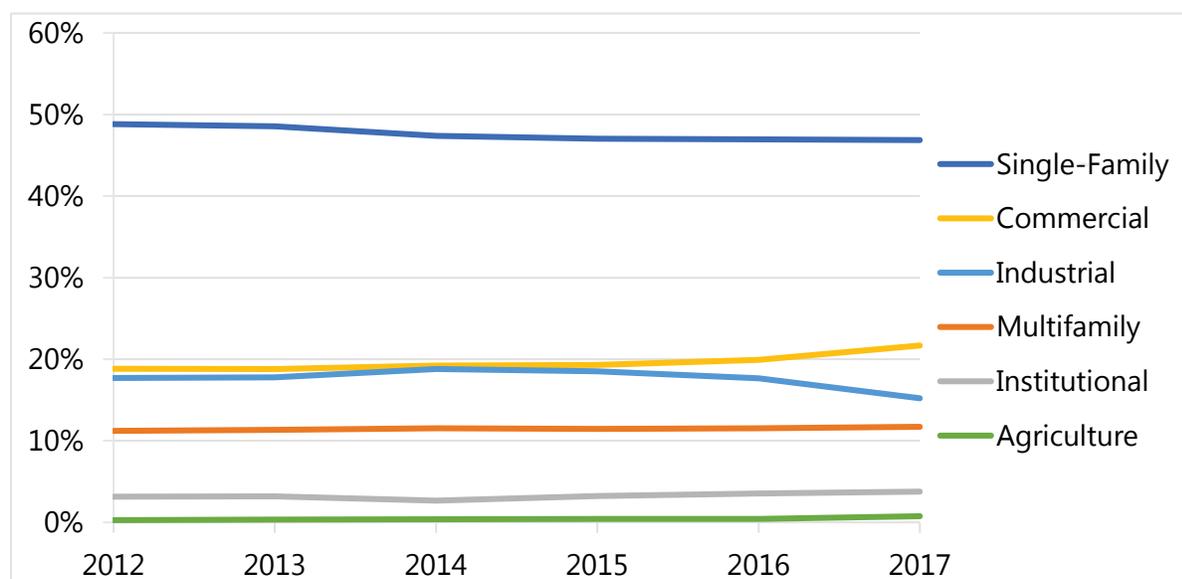
<sup>3</sup> Municipal water use does not include water volumes sold to large manufacturing, mining, or steam-electric power facilities.

## 4 Sector-Based Water Use

Categorizing water use into six sectors first became standardized in the 2012 reporting year (see Appendix B for definitions of each sector). From the 2012-2017 Water Use Surveys, about 70 percent of the water utilities serving more than 3,300 customer connections reported water use by the various customer sectors for all years. Of these reporting water utilities, water use within almost all sectors has remained relatively stable (Figure 2). Some changes in volume may also be a result of reclassification of water use, for instance, from institutional to commercial between 2016 and 2017 in Figure 2.

Over this same time, the state’s population grew by more than 2.2 million people, or 8.6 percent.<sup>4</sup>

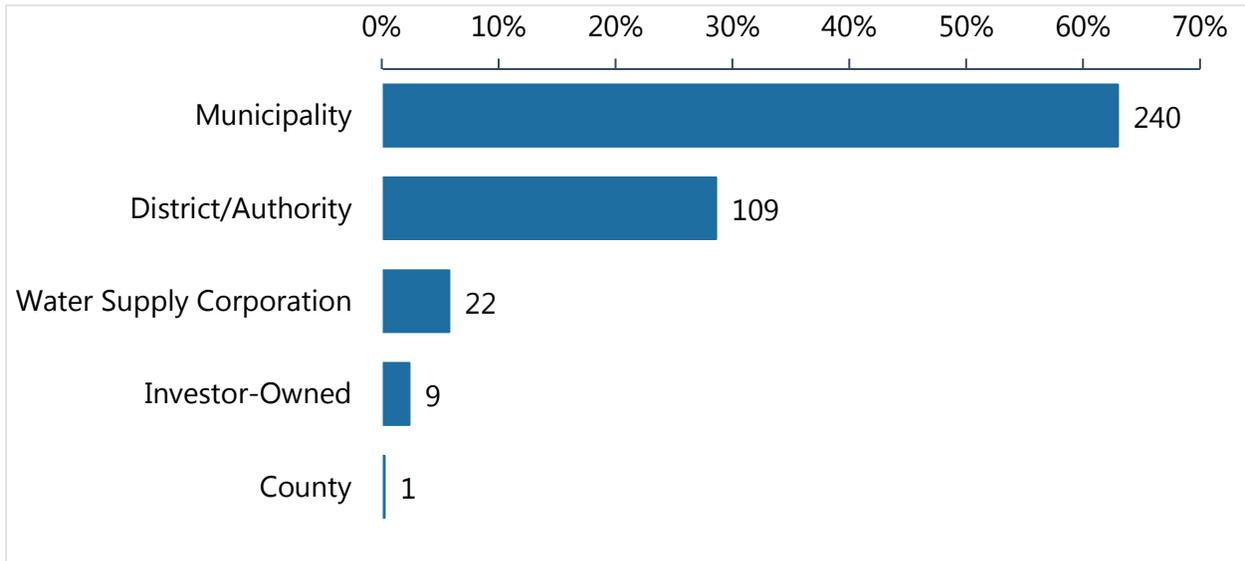
**Figure 2 – Historical sector-based relative share of water use**



In 2017, the TWDB sent annual water use surveys to more than 4,600 public water systems. Each water utility, whether a municipality-owned, a district, a water supply corporation, or an investor-owned utility, may own one or more of the surveyed public water systems. Three hundred eighty-one utilities met the criteria of serving more than 3,300 connections in 2017 reporting year (Appendix C). More than 60 percent of these utilities were municipality owned, although all types of ownership were represented by at least one utility (Figure 3).

<sup>4</sup> U.S. Census Bureau population estimates: <https://www.census.gov/programs-surveys/popest/data/tables.html>

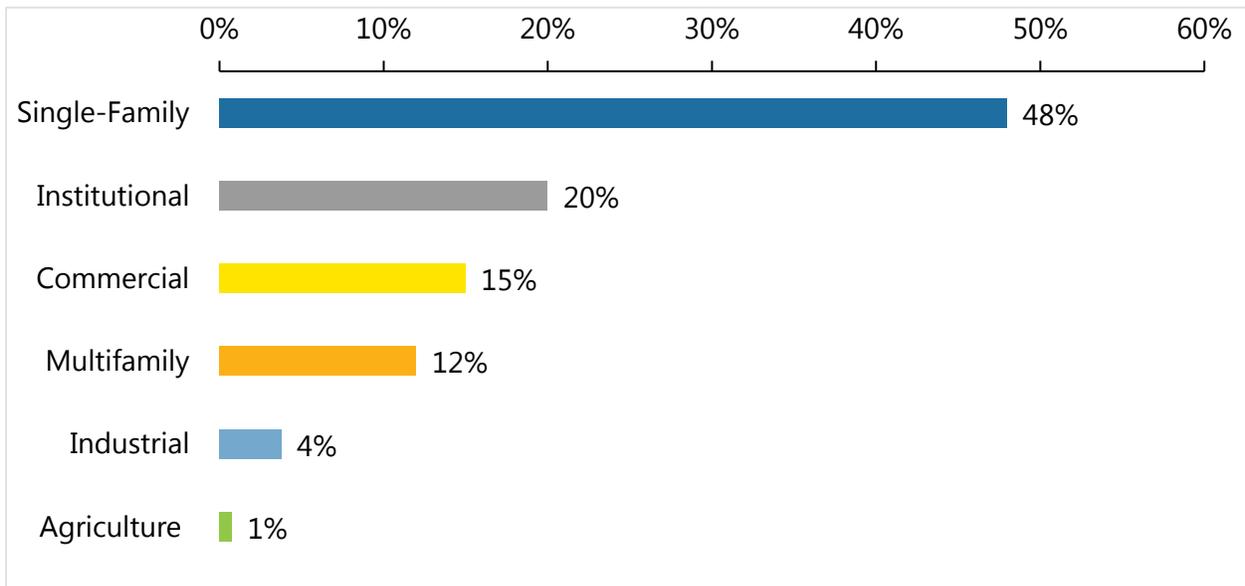
**Figure 3 – Water utilities by ownership type**



Of the 381 utilities that met the criteria of serving more than 3,300 connections in 2017, about 80 percent of these water utilities reported water use by the various customer sectors. Of those reporting by sector, over half of the metered water volume was delivered to residential customers consisting of single-family (48 percent) and multifamily (12 percent) customers (Figure 4).

**Figure 4 – Sector-based water use, 2017**

Sectors shown as a percentage of total metered water by volume.



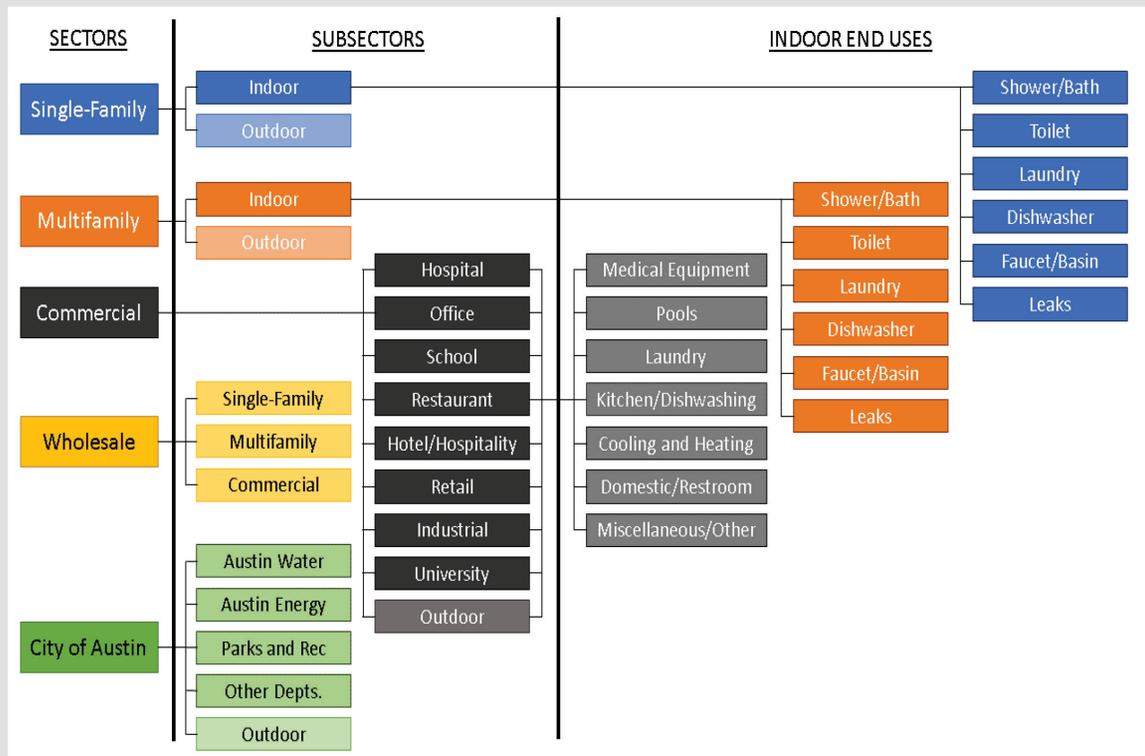
## Data Highlight of Sector-Based Water Use

### **Overview of Austin’s Disaggregated Demand Model**

As part of the City of Austin’s 100-year integrated water resources planning efforts, water demand estimates and baseline demand assessments were created using a Disaggregated Demand Model (Model). The Model is an Excel-based tool that models water use by sector, subsector, and end use at geographic planning units for current demands, as well as for the key planning periods of 2020, 2040, 2070, and 2115.

The Model includes functionality to track water consumption by end uses, such as toilets, sinks, and irrigation. The water use sectors are further refined into subsectors and indoor end uses shown below. Demographic analyses from the city’s master planning efforts, combined with sector-specific water billing data, are the primary drivers of water use estimates across the city. Estimates of existing and future water demands by sector, subsector, and end use were developed by the Model.

#### Disaggregated Demand Model Sectors, Subsectors, and End Uses



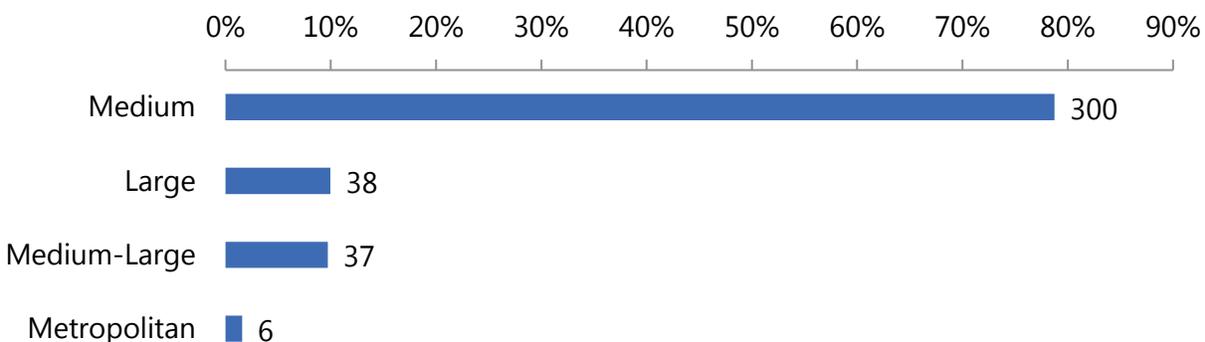
## *Water Use by Utility Size*

Each utility serves a different customer base; however, it is instructive to categorize water utilities into general size categories to examine if there are common characteristics within the utilities of a similar size. The following section summarizes water use information for four general size categories based on the total connections reported in the TCEQ's Safe Drinking Water Information System:

- **Medium water utilities** – 3,300 to 16,667 connections (generally 10,000 to 50,000 population)
- **Medium-large water utilities** – 16,668 to 33,333 connections (generally 50,000 to 100,000 population)
- **Large water utilities** – 33,334 to 166,666 connections (generally 100,000 to 500,000 population)
- **Metropolitan water utilities** – more than 166,666 connections (generally more than 500,000 population)

The criterion of 3,300 connections was set forth in Texas Water Code §16.403. The category of "medium" is used to distinguish such systems from the small-system designation of utilities with fewer than 3,300 connections used by the U.S. Environmental Protection Agency's Drinking Water Infrastructure Needs Survey and Assessment. The additional break points for the size categories were selected for this report based upon population thresholds for various local government development powers, such as extra-territorial jurisdiction buffer size and eligibility for federal Community Development Block Grants. Most water utilities fall into the medium category (Figure 5).

**Figure 5 – Water utilities by size, 2017**



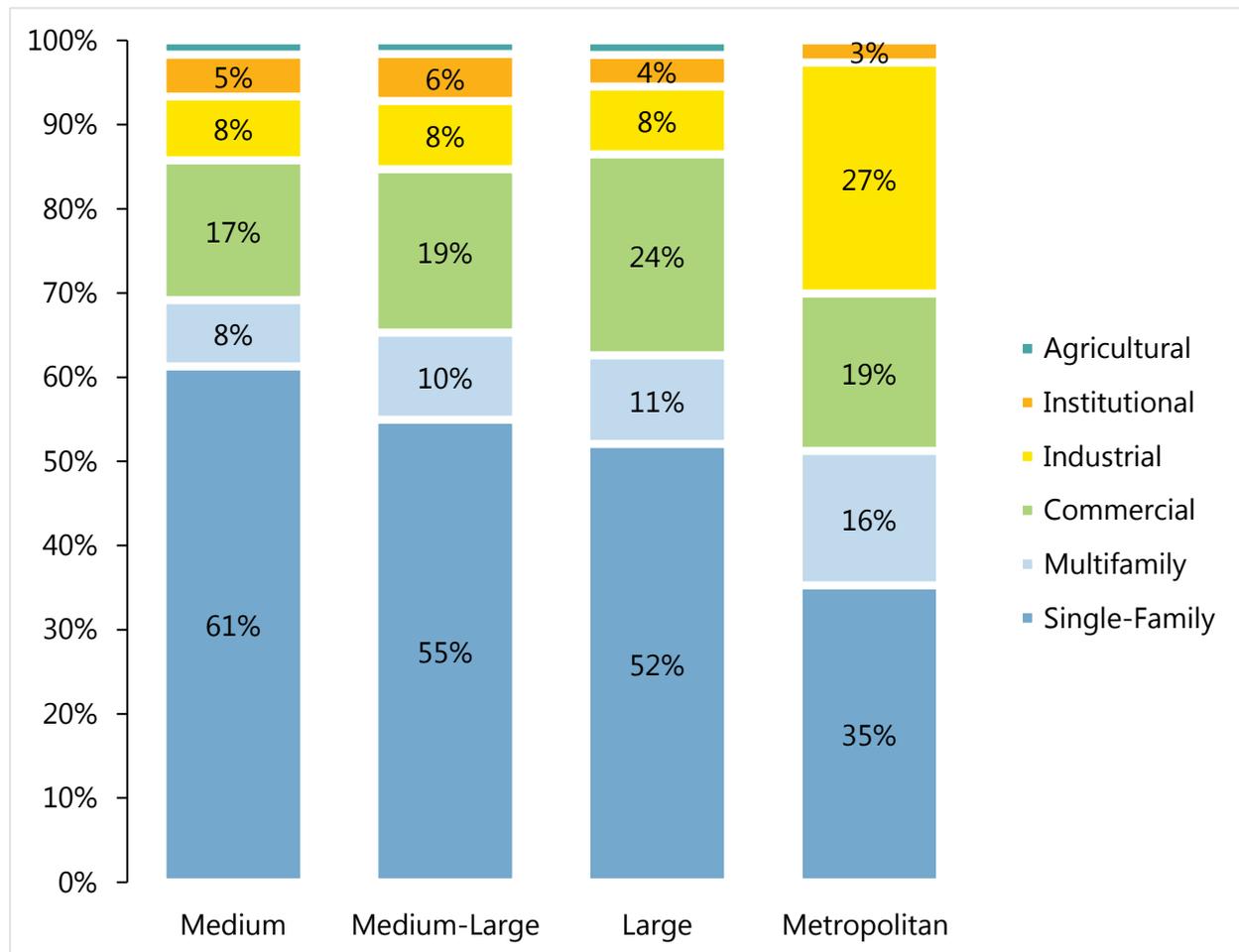
## Water Use of Texas Water Utilities, January 1, 2019

It is generally the case that smaller utilities will have a greater percentage of their water used for single-family residences (Figure 6). As a community and its water utility grow, more multifamily, institutional, commercial, and industrial customers tend to be established. Furthermore, agricultural water use tends to decrease as a utility becomes larger and more urbanized.

The customer base of utilities is unique to the water demands of their location, other utilities in the surrounding area, and available water sources. For example, the industrial sector of metropolitan utilities is heavily weighted by the City of Houston's provision of almost 50 percent industrial use. For metropolitan utilities, the water use data for the City of Dallas is not included in the values in Figure 6 because the city's billing system does not account for residential connections separated by single-family and multifamily sectors.

**Figure 6 – Sector-based water use by size, 2017**

Sectors with less than 3 percent are not labeled on the chart. Percentages may not total to 100 percent due to rounding.



## 5 Daily Water Use

Comparing gallons of per capita daily water use is often difficult and unproductive due to variations in assumptions and calculations. Texas Water Code §16.403 directed the TWDB and TCEQ to develop a uniform methodology of calculating the total and residential water use in gallons per capita daily. The average total gallons per capita daily generally increases with the size of the utility since larger utilities tend to have more institutional, commercial, and industrial customers, which will increase the gallons per capita daily calculation. In other words, more water is used, but not necessarily by residents themselves.

Regarding per capita water use (Table 1), 2016 values are used because the utility service area population estimates are based on the U.S. Census block group data and utility service area boundaries. Also, the 2017 Census data was not available at the time of this report.

The average residential (single-family and multifamily) water use gallons per capita daily, often referred to as "GPCD," decreases with the size category of the utility. Water loss of approximately 20 GPCD appears to be relatively consistent, regardless of size category of the utility. Total water use GPCD is the highest among Medium-Large utilities. This is due to higher non-residential water use (primarily industrial water use).

Because some utilities respond to the survey one year but not the next, or they do not consistently report their annual water use by sector, analyzing trends over time can be problematic and misleading. Therefore, it is important for individual utilities to carefully track their own changes over time.

**Table 1 – Average per-capita daily water use by utility size, 2016** (in gallons)

	Medium	Medium-Large	Large	Metropolitan	All analyzed utilities
Residential	89	87	85	67	88
Water loss	20	21	20	18	20
Total water use	140	160	145	146	143

When water use by sector is available, the resulting average per-connection daily water use better characterizes the utility and its customers. When daily water use per-connection is calculated, the water use variation between different customer sectors becomes apparent (Table 2). The higher per-connection water usage for multifamily connections is possibly an indication

Water Use of Texas Water Utilities, January 1, 2019

of the difficulty utilities face in determining the number of apartment units/connections versus a single master meter serving an entire apartment complex. Instructions in the Water Use Survey specify the intent to collect the number of housing *units* rather than a count of the master connections for each apartment complex.

**Table 2 – Average per-connection daily water use by sector and utility size, 2017** (in gallons)

	Medium	Medium-Large	Large	Metropolitan	All analyzed utilities
Single-family residential	223	246	247	204	227
Multifamily residential	238	176	241	594	328
Commercial	754	933	1,266	1,671	1,185
Industrial	19,378	28,138	25,335	9,023 <sup>5</sup>	11,246
Institutional	1,939	2,080	2,045	1,983	2,002
Agricultural	1,152	686	849	0	900
Total water use	299	324	360	465	371

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<sup>5</sup> The industrial sector of metropolitan utilities is heavily influenced by the City of Houston's provision of almost 50 percent industrial use.

## 6 TWDB Online Data-Collection Efforts

### *Consolidated Reporting*

The 83rd Legislature (2013) appropriated funds for the TWDB to consolidate online reporting for the Water Use Survey, Water Loss Audit, and the Conservation Plan Annual Report.<sup>6</sup> As noted earlier, the information analyzed in this report was collected in the Water Use Survey with data from community public water systems, which are the building blocks of water utilities. The integration of the data collection between the survey, the audit, and the Conservation Plan Annual Report provides a unique opportunity to view how utilities use, lose, and conserve their water.

In 2016, the Water Use Survey and the Water Loss Audit were integrated so that all common information entered in the survey automatically populates in the audit's online form. A subsequent phase of the project, which became operational in January 2017, created an online reporting tool for the Conservation Plan Annual Report. Like the Survey-Audit integration, any common data entered into the first two forms is populated in the Conservation Annual Report. The consolidation and implementation of the innovative online tool are saving utility staff time and improving the quality of the data collected.

A separate biennial report to the Legislature, *Evaluation of Best Management Practices in Certain Water Conservation Plans*, includes a summary of the evaluation of retail public utilities providing potable water service to 3,300 or more connections for compliance with the TWDB's water conservation plan best management practices.

### *Public Water System Boundary Viewer*

The TWDB has developed a statewide public water system service boundary mapping application, the "Texas Water Service Boundary Viewer," through a grant from the U.S. Geological Survey. This online application strives to provide the best current data available on the service areas for all community public water systems within Texas. In conjunction with the annual Water User Survey, water system participants are encouraged to update their boundaries or verify that the boundaries on file are displaying the correct service area boundary of their customers. In January 2019, the application will also be available to the public to view the water service boundaries and related reports, including historical water use and TCEQ public water

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<sup>6</sup> 83rd Texas Legislature, General Appropriations Act, p. VI-61, paragraph 24.

system information. This innovative tool will further improve the quality and usefulness of information already being collected in the Water Use Survey.

## **7 Conclusion**

Texas water utilities, at the provider level, continue to improve their ability to understand their individual customer base and the volume of water delivered to customers. The TWDB, in the meantime, has developed tools to increase the efficiency and accuracy of the data reported in the Water Use Survey.

These advances have allowed Texans to gain a better understanding of how water is being used by utility customers. Such knowledge has continued to assist utilities to better focus their water conservation efforts and programs on the customer sectors and to better plan for long-term needs.

## **8 Appendix A – General Description of Texas Water Code §16.403 and §16.404**

In 2011, the 82nd Texas Legislature passed Senate Bill 181 to address the calculation and reporting of water usage by municipalities and water utilities for state water planning and other purposes. Through amendments to Chapter 16 of the Texas Water Code, this legislation established a consistent method for reporting water use data and improving conservation reporting procedures.

Texas Water Code §16.053(e) requires that regional water plans include information on projected water use and conservation in the regional water planning area, as well as the implementation of projects and water conservation strategies necessary to meet the state's water demands based on these projections. Evaluating implementation of such conservation strategies is dependent upon utilities measuring their water use in a consistent manner over time.

Senate Bill 181 added §16.403 and §16.404 to the Texas Water Code. Section 16.403, Water Use Reporting, requiring the TWDB and TCEQ, in consultation with the Water Conservation Advisory Council (WCAC), to develop a uniform, consistent methodology for calculating water use and a guidance document for reporting on water conservation. Municipalities and water utilities with more than 3,300 connections are required to use these methodologies in their efforts to develop water conservation plans and prepare annual reports and five-year implementation reports. Section 16.404, Rules and Standards, directs the TWDB and TCEQ to require an entity to report the most detailed level of water use data that the entity can produce.

Texas Water Code §16.404 required that by January 1, 2015, and on that date of each subsequent odd-numbered year, the TWDB shall submit to the Legislature a report regarding the statewide water usage by water utilities in the residential, industrial, agricultural, commercial, and institutional sectors, as well as the data collection and reporting program developed.

### *Development of the Data Collection and Reporting Program*

The development of the reporting methodology was conducted by a committee described as the "Senate Bill 181 Committee," composed of staff from the TWDB and TCEQ, as well as interested members of the WCAC. The committee met periodically in late 2011 and early 2012 to discuss rules, definitions, calculations, guidance documents, and other requirements pertaining to implementation of the bill. Documents developed by the Senate Bill 181

Committee were posted on December 2012 on the TWDB's website for public review and resulted in the *Guidance and Methodology for Reporting on Water Conservation and Water Use*. Much of the following information can be found in the guidance document available on the TWDB's website.

### *Water Use Calculation Methodology*

Texas Water Code §16.403 states that "a sector-based water use metric, adjusted for variables in water use by municipalities and water utilities, is necessary to provide an accurate comparison of water use and water conservation among municipalities and water utilities." The TWDB and TCEQ, in consultation with the WCAC, developed a uniform, consistent methodology and guidance for calculating water use and conservation to be used by a municipality or water utility in developing water conservation plans and preparing reports required under this code. At a minimum, this sector-based methodology and guidance are required by Texas Water Code §16.403(b) to include

- a method of calculating total water use by a municipality or water utility, including water billed and nonrevenue water used, and a method of calculating water use for each sector of water users served by a municipality or water utility;
- a method of calculating total water use by a municipality or water utility in gallons per capita per day;
- a method of classifying water users within sectors;
- a method of calculating water use in the residential sector that includes both single-family and multi-family residences, in gallons per capita per day;
- a method of calculating water use in the industrial, agricultural, commercial, and institutional sectors that is not dependent on a municipality's population or the number of customers served by a water utility; and
- guidelines on the use of service populations by a municipality or water utility in developing a per-capita-based method of calculation, including guidance on the use of permanent and temporary populations in making calculations.

The results of the collaboration between the TWDB, TCEQ, and WCAC in developing the methodology and guidance can be found in *Guidance and Methodology for Reporting on Water Conservation and Water Use*.

## 9 Appendix B – Sector Descriptions

### **Total Water Use and Residential Water Use**

The legislature directed the TWDB and TCEQ, in consultation with the Water Conservation Advisory Council, to develop “a uniform, consistent methodology and guidance for calculating water use,” including total water use in gallons per capita daily and residential (single-family and multifamily) in gallons per capita daily (Texas Water Code §16.403b). The previously mentioned Senate Bill 181 Committee developed such methodology and guidance, and a full description of such gallons per capita daily figures can be found in *Guidance and Methodology for Reporting on Water Conservation and Water Use*.<sup>7</sup>

#### ***Total Water Use***

“Total gallons per capita per day takes into account all water use sectors that a system may have including residential, industrial, commercial, institutional, and agricultural. This metric then divides the total volume of water taken into the system by a population number, even though not all of the water use may be population-dependent.” (Guidance, p. 29)

#### ***Residential Water Use***

“Residential gallons per capita per day — the total gallons sold for residential use by a public water supplier divided by the residential population served and then divided by the number of days in the year.” (Texas Administrative Code Chapter 288.1) (Guidance, p. 33)

#### **Single-family Residential**

Single-family residential use is defined as the use of water that is delivered to single residences, which applies to indoor and outdoor uses. Single-family residential use is a classification of housing in which a single detached dwelling is a freestanding residential building. However, duplexes are also included in the single-family residential sector due to the similarity in water use and the common practice of allowing duplexes within single-family residential zoning areas.

#### **Multifamily Residential**

Multifamily residential use is a classification of housing in which multiple separate housing units for residents are contained within one building or several buildings within one complex. Water use and the number of units (connections) are often difficult for utilities to report, as the

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<sup>7</sup> [www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf](http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf) (Hereafter referred to as Guidance)

apartment complex may be categorized as commercial and the complex may have a single meter.

### **Institutional**

Institutional use is defined as the use of water by an establishment dedicated to public service, such as a school, university, church, hospital, nursing home, prison, or government facility. All facilities dedicated to public service are considered institutional regardless of ownership. (Guidance, p. 15)

### **Commercial**

Commercial use is defined as the use of water by a place of business, such as a hotel, restaurant, or office building. This does not include multifamily residences or agricultural, industrial, or institutional users. (Guidance, p. 14)

### **Industrial**

Industrial use is defined as the use of water in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, and the development of power by means other than hydroelectric (agricultural use is excluded). (Guidance, p. 14)

### **Agricultural**

Agricultural use is defined as any water use involving agriculture, including irrigation. Agriculture is defined to include the following activities:

- Cultivating the soil to produce crops for human food, animal feed, or seed planting, or for production of fibers;
- Practicing floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media by a nursery grower;
- Raising, feeding, or keeping animals for breeding purposes or for production of food or fiber, leather, pelts, or other tangible products having a commercial value;
- Raising or keeping equine animals;
- Managing wildlife; and
- Planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure. (Guidance, p. 14)

## 10 Appendix C – Water Utilities by Size with 3,300 or more Connections

(FWSD = Fresh Water Supply District; MUD = Municipal Utility District; SUD = Special Utility District; WCID = Water Control and Improvement District; WSC = Water Supply Corporation)

### MEDIUM

ACTON MUD	CITY OF BELLAIRE	CITY OF EL CAMPO
AGUA SUD	CITY OF BELLMEAD	CITY OF ELGIN
ATASCOSA RURAL WSC	CITY OF BELTON	CITY OF ENNIS
BACLIFF MUD	CITY OF BIG SPRING	CITY OF FAIRVIEW
BENBROOK WATER AUTHORITY	CITY OF BOERNE	CITY OF FATE
BENTON CITY WSC	CITY OF BONHAM	CITY OF FOREST HILL
BETHESDA WSC	CITY OF BORGER	CITY OF FORNEY
BI-COUNTY WSC	CITY OF BRENHAM	CITY OF FORT STOCKTON
BOLIVAR PENINSULA SUD	CITY OF BRIDGE CITY	CITY OF FREDERICKSBURG
BOLIVAR WSC	CITY OF BROWNFIELD	CITY OF FRIENDSWOOD
BRIDGESTONE MUD	CITY OF BROWNWOOD	CITY OF FULSHEAR
BROOKESMITH SUD	CITY OF BUDA	CITY OF GAINESVILLE
BRUSHY CREEK MUD	CITY OF BURKBURNETT	CITY OF GALENA PARK
CADDO BASIN SUD	CITY OF BURLESON	CITY OF GLENN HEIGHTS
CANYON LAKE WATER SERVICE	CITY OF CANYON	CITY OF GRAHAM
CASH SUD	CITY OF CARTHAGE	CITY OF GRANBURY
CIMARRON MUD	CITY OF CEDAR HILL	CITY OF GREENVILLE
CITY OF ADDISON	CITY OF CELINA	CITY OF GROVES
CITY OF ALAMO	CITY OF CIBOLO	CITY OF HALTOM CITY
CITY OF ALAMO HEIGHTS	CITY OF CLEBURNE	CITY OF HARKER HEIGHTS
CITY OF ALICE	CITY OF CLUTE	CITY OF HENDERSON
CITY OF ALVIN	CITY OF COLLEYVILLE	CITY OF HEREFORD
CITY OF ANDREWS	CITY OF CONVERSE	CITY OF HEWITT
CITY OF ANGLETON	CITY OF COPPELL	CITY OF HIDALGO
CITY OF ANNA	CITY OF COPPERAS COVE	CITY OF HIGHLAND PARK
CITY OF ARANSAS PASS	CITY OF CORSICANA	CITY OF HIGHLAND VILLAGE
CITY OF ATHENS	CITY OF CROWLEY	CITY OF HORSESHOE BAY
CITY OF AZLE	CITY OF DALHART	CITY OF HUMBLE
CITY OF BALCH SPRINGS	CITY OF DEER PARK	CITY OF HUNTSVILLE
CITY OF BASTROP	CITY OF DENISON	CITY OF HURST
CITY OF BAY CITY	CITY OF DONNA	CITY OF HUTTO
CITY OF BEDFORD	CITY OF DUMAS	CITY OF INGLESIDE
CITY OF BEEVILLE	CITY OF DUNCANVILLE	CITY OF JACKSONVILLE

Water Use of Texas Water Utilities, January 1, 2019

**MEDIUM** (continued)

CITY OF JASPER	CITY OF RIO GRANDE CITY	CRYSTAL SPRINGS WATER
CITY OF JERSEY VILLAGE	CITY OF ROBINSON	CYPRESS HILL MUD 1
CITY OF KATY	CITY OF ROCKPORT	CYPRESS SPRINGS SUD
CITY OF KELLER	CITY OF ROCKWALL	DEL RIO UTILITIES COMMISSION
CITY OF KENNEDALE	CITY OF ROMA	DENTON COUNTY FWSD 10
CITY OF KERRVILLE	CITY OF ROSENBERG	DENTON COUNTY FWSD 1-A
CITY OF KILGORE	CITY OF ROYSE CITY	DENTON COUNTY FWSD 7
CITY OF KINGSVILLE	CITY OF SACHSE	EAST CEDAR CREEK FWSD
CITY OF KYLE	CITY OF SAGINAW	EAST CENTRAL SUD
CITY OF LA MARQUE	CITY OF SAN BENITO	EAST FORK SUD
CITY OF LA PORTE	CITY OF SAN JUAN	EAST RIO HONDO WSC
CITY OF LAGO VISTA	CITY OF SCHERTZ	FORT BEND COUNTY MUD 23
CITY OF LAKE JACKSON	CITY OF SEABROOK	FORT BEND COUNTY MUD 25
CITY OF LAMESA	CITY OF SEAGOVILLE	FORT BEND COUNTY MUD 30
CITY OF LAMPASAS	CITY OF SEGUIN	FORT BEND COUNTY MUD 58
CITY OF LANCASTER	CITY OF SELMA	FORT BEND COUNTY WCID 2
CITY OF LEVELLAND	CITY OF SNYDER	G M WSC
CITY OF LOCKHART	CITY OF SOUTH HOUSTON	GALVESTON COUNTY WCID 1
CITY OF MABANK	CITY OF SOUTHLAKE	GOFORTH SUD
CITY OF MANOR	CITY OF STEPHENVILLE	GREEN VALLEY SUD
CITY OF MARSHALL	CITY OF SULPHUR SPRINGS	HARRIS COUNTY FWSD 51
CITY OF MELISSA	CITY OF SWEETWATER	HARRIS COUNTY FWSD 61
CITY OF MERCEDES	CITY OF TAYLOR	HARRIS COUNTY MUD 1
CITY OF MIDLOTHIAN	CITY OF TERRELL	HARRIS COUNTY MUD 102
CITY OF MINERAL WELLS	CITY OF TOMBALL	HARRIS COUNTY MUD 120
CITY OF MOUNT PLEASANT	CITY OF UNIVERSAL CITY	HARRIS COUNTY MUD 157
CITY OF MURPHY	CITY OF UNIVERSITY PARK	HARRIS COUNTY MUD 165
CITY OF NAVASOTA	CITY OF UVALDE	HARRIS COUNTY MUD 167
CITY OF NEDERLAND	CITY OF VERNON	HARRIS COUNTY MUD 168
CITY OF ORANGE	CITY OF WATAUGA	HARRIS COUNTY MUD 200
CITY OF PALESTINE	CITY OF WAXAHACHIE	HARRIS COUNTY MUD 24
CITY OF PARIS	CITY OF WEATHERFORD	HARRIS COUNTY MUD 26
CITY OF PECOS	CITY OF WEBSTER	HARRIS COUNTY MUD 285
CITY OF PFLUGERVILLE	CITY OF WESLACO	HARRIS COUNTY MUD 368
CITY OF PLAINVIEW	CITY OF WEST UNIVERSITY PLACE	HARRIS COUNTY MUD 391
CITY OF PLEASANTON	CITY OF WHITE SETTLEMENT	HARRIS COUNTY MUD 419
CITY OF PORT LAVACA	CITY OF WOODWAY	HARRIS COUNTY MUD 53
CITY OF PORT NECHES	CITY OF WYLIE	HARRIS COUNTY MUD 55
CITY OF PORTLAND	CLEAR BROOK CITY MUD	HARRIS COUNTY MUD 71
CITY OF PRINCETON	CNP UTILITY DISTRICT	HARRIS COUNTY MUD 81
CITY OF RICHLAND HILLS	CORIX UTILITIES TEXAS	HARRIS COUNTY MUD 82
CITY OF RICHMOND	CRYSTAL CLEAR SUD	HARRIS COUNTY UD 6

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**MEDIUM** (continued)

HARRIS COUNTY WCID 109	PAMPA MUNICIPAL WATER SYSTEM
HARRIS COUNTY WCID 36	PASEO DEL ESTE MUD 1
HARRIS-MONTGOMERY COUNTIES MUD 386	PECAN GROVE MUD 1
HILCO UNITED SERVICES	PERRYTON MUNICIPAL WATER SYSTEM
H-M-W SUD	PONDEROSA FOREST UTILITY DISTRICT
HORIZON REGIONAL MUD	PORTER SUD
HUDSON WSC	QUADVEST
JONAH WATER SUD	QUAIL VALLEY UTILITY DISTRICT
KEMPNER WSC	RAYFORD ROAD MUD
KINGSLAND WSC	RED RIVER AUTHORITY OF TEXAS
LAGUNA MADRE WATER DISTRICT	REMINGTON MUD 1
LAKE CITIES MUNICIPAL UTILITY AUTHORITY	ROCKETT SUD
LAKE LIVINGSTON WATER SUPPLY	SS WSC
LAKEWAY MUD	SARDIS LONE ELM WSC
LAMAR COUNTY WATER SUPPLY DISTRICT	SOUTHERN MONTGOMERY COUNTY MUD
LANGHAM CREEK UTILITY DISTRICT	SPRING CREEK UTILITY DISTRICT
LEE COUNTY WSC	SPRINGS HILL WSC
LINDALE RURAL WSC	STAFF WSC
LUMBERTON MUD	SUNBELT FWSD
MANVILLE WSC	THE CONSOLIDATED WSC
MAURICEVILLE SUD	TIMBER LANE UTILITY DISTRICT
MEMORIAL VILLAGES WATER AUTHORITY	TOWN OF CORINTH
MILITARY HIGHWAY WSC	TOWN OF LITTLE ELM
MONTGOMERY COUNTY MUD 7	TOWN OF PROSPER
MONTGOMERY COUNTY MUD 9	TRAVIS COUNTY WCID 17
MONTGOMERY COUNTY MUD 46	TRI SUD
MONTGOMERY COUNTY MUD 47	TRINITY BAY CONSERVATION DISTRICT
MONTGOMERY COUNTY MUD 60	WALNUT CREEK SUD
MOUNTAIN PEAK SUD	WELLBORN SUD
MSEC ENTERPRISES	WELLS BRANCH MUD
MUSTANG SUD	WEST CEDAR CREEK MUD
NEW CANEY MUD	WEST TRAVIS COUNTY PUBLIC UTILITY AGENCY
NEWPORT MUD	WICKSON CREEK SUD
NORTH AUSTIN MUD 1	WINDERMERE UTILITY
NORTHTOWN MUD	ZAPATA COUNTY
NORTHWEST HARRIS COUNTY MUD 5	
NORTHWEST PARK MUD	
NUECES COUNTY WCID 3	
NUECES COUNTY WCID 4	
ORANGE COUNTY WCID 1	

Water Use of Texas Water Utilities, January 1, 2019

**MEDIUM-LARGE**

AQUA TEXAS  
AQUA WSC  
CITY OF BAYTOWN  
CITY OF BRYAN  
CITY OF CEDAR PARK  
CITY OF COLONY  
CITY OF CONROE  
CITY OF DESOTO  
CITY OF EAGLE PASS  
CITY OF EDINBURG  
CITY OF EULESS  
CITY OF FARMERS BRANCH  
CITY OF GALVESTON  
CITY OF GRAPEVINE  
CITY OF HARLINGEN  
CITY OF LEANDER  
CITY OF LONGVIEW  
CITY OF LUFKIN  
CITY OF MANSFIELD  
CITY OF MISSION  
CITY OF NACOGDOCHES  
CITY OF NORTH RICHLAND HILLS  
CITY OF PHARR  
CITY OF PORT ARTHUR  
CITY OF ROWLETT  
CITY OF SAN MARCOS  
CITY OF SHERMAN  
CITY OF TEXARKANA  
CITY OF TEXAS CITY  
CITY OF VICTORIA  
CLEAR LAKE CITY WATER AUTHORITY  
JOHNSON COUNTY SUD  
LOWER VALLEY WATER DISTRICT  
MONARCH UTILITIES  
SHARYLAND WSC  
SOUTHERN UTILITIES  
TOWN OF FLOWER MOUND

**LARGE**

CITY OF ABILENE  
CITY OF ALLEN  
CITY OF AMARILLO  
CITY OF ARLINGTON  
CITY OF BEAUMONT  
CITY OF BROWNSVILLE  
CITY OF CARROLLTON  
CITY OF COLLEGE STATION  
CITY OF CORPUS CHRISTI  
CITY OF DENTON  
CITY OF FRISCO  
CITY OF GARLAND  
CITY OF GEORGETOWN  
CITY OF GRAND PRAIRIE  
CITY OF IRVING  
CITY OF KILLEEN  
CITY OF LAREDO  
CITY OF LEAGUE CITY  
CITY OF LEWISVILLE  
CITY OF LUBBOCK  
CITY OF MCALLEN  
CITY OF MCKINNEY  
CITY OF MESQUITE  
CITY OF MIDLAND  
CITY OF NEW BRAUNFELS  
CITY OF ODESSA  
CITY OF PASADENA  
CITY OF PEARLAND  
CITY OF PLANO  
CITY OF RICHARDSON  
CITY OF ROUND ROCK  
CITY OF SAN ANGELO  
CITY OF SUGARLAND  
CITY OF TEMPLE  
CITY OF TYLER  
CITY OF WACO  
CITY OF WICHITA FALLS  
NORTH ALAMO WSC

**METROPOLITAN**

CITY OF AUSTIN  
CITY OF DALLAS  
CITY OF FORT WORTH  
CITY OF HOUSTON  
EL PASO WATER UTILITIES  
SAN ANTONIO WATER SYSTEM