Excerpt from the 2018 'Progress Made in Water Conservation in Texas: Report and Recommendations to the 86th Legislature' Report

1. Enhanced data collection, management, and accessibility

In order to evaluate meaningful trends in water use and the effectiveness of conservation programs and strategies, targeted water use data must be collected and readily available to state, regional and local water use planners. While more data is always better, a consistent baseline is essential for monitoring long-term trends.

As discussed previously in Charge 1, the lack of quality data hampers efforts to monitor trends in implementation of water conserving activities. While the TWDB collects data to assist with water planning, resource management, and education, often the data needed to assess progress in water conservation simply does not exist.

For example, the agricultural sector is the highest water use sector in the state; however, the last detailed Statewide Survey of Irrigated Acreage, Water Use, and Irrigation System by Type was conducted in 2001 by the Texas State Soil and Water Conservation Board and the Texas Water Development Board in collaboration with the U.S. Department of Agriculture – Natural Resources Conservation Service (TWDB, 2001). The survey was extremely resource-intensive and relied heavily on the involvement of county-level USDA personnel across the state. Because of a reallocation of priorities and resources, this survey is no longer feasible.

Enhanced data collection efforts, such as surveys of irrigation efficiency, implementation of remote sensing capabilities, delineation of irrigated field polygons, and adoption of metering and other water use monitoring technologies, would provide a better understanding of agricultural water use and conservation efforts in the state.

Another area of data collection in need of enhancement is the systemic quantification of the percent of water used that is returned as wastewater. This will enhance the ability to analyze how much water is available for reuse and will enhance the ability to determine consumptive vs. non-consumptive uses of water in the municipal sectors.

One new area of data analysis is the benchmarking of commercial and institutional water use throughout the United States, as shown in Table 6. These efforts are at the foundational stage in Texas. Since a third of municipal uses is for these two sectors, benchmarking commercial and institutional use by user type will greatly enhance the ability of municipal water conservation programs to effectively target these areas and develop meaningful metrics.

Also vital to TWDB's mission is the dissemination of these datasets. Ensuring that up-to-date and accurate information is collected, managed, and made available online to the public allows for enhanced analyses and can help direct future water conservation efforts. The TWDB has made a concerted effort to make data available in a timely manner to assist water planners. It is important that the agency continue to receive support to prioritize these activities.

Table 6. Examples of Commercial & Institutional Benchmarks

Type of Facility	Units of Water	Measures
Schools	Gallons, CCF*	FTE† students + faculty and staff, square feet
Hotels	Gallons, CCF	Rooms, occupied rooms, number of guests, employees, square feet
Hospitals	Gallons, CCF	Beds, occupied beds, discharges, patient days, square feet, inpatient days plus outpatient visit divided by outpatient average hours of stay, square feet, doctors and staff
Restaurants	Gallons, CCF	Meals, covers (tabs), employees, seats, square feet
Office Buildings	Gallons, CCF	Employees, square feet
Golf Courses	Gallons, CCF, acre feet‡	Acres, square feet, number of holes

* CCF = 100 $ft.^3$; †FTE = Full-Time Employee; ‡ 1 Acre Foot = 43,560 ft^3 (325,851 gallons)

The Council recommends that, subject to available state revenue for the 2020-2021 biennium, the Texas Legislature increase appropriations to the TWDB to enhance existing data collection, management, and accessibility efforts and to ascertain what cities and water utilities need to do to begin collecting information discussed above.

3. Maintain funding for agricultural water conservation and research programs

According to the Texas Water Resources Institute, voluntary adoption of new practices and technologies by agricultural producers resulted in a dramatic increase in statewide irrigation application efficiency: from about 60 percent efficient in 1970 to 88-95 percent today (Wagner, 2012).

Improvements in agricultural irrigation use efficiency in Texas have been achieved through effective research and education programs and the technical and financial assistance available to aid in their adoption. Despite these efforts, opportunities remain to further advance agricultural water use efficiencies and conservation

The 2017 State Water Plan projects that agricultural irrigation use will decline over the fifty-year planning horizon – due primarily to more efficient irrigation systems, reduced groundwater supplies, the economic difficulty of pumping water from increasingly greater depths, reduced availability due to drought and the transfer of water rights from agricultural to municipal uses. However, the irrigation needs identified in the plan far exceed those of any other water use sector for each decade of the planning horizon, thus highlighting the importance of increased irrigation efficiency in maintaining the economic viability of the agricultural sector.

To meet a portion of the identified irrigation needs, the regional planning groups recommended irrigation conservation strategies consisting of both on-farm practices, such as equipment upgrades that improve upon irrigation efficiency, and in-district improvements, such as lining canals to reduce conveyance losses. Other best management practices (e.g. brush control, residue management, cover crops) applied on agricultural land also help reduce evapotranspiration losses, and may increase the potential for beneficial water yields to downstream water supply reservoirs. Further research in improving crop genetics, drought tolerance, irrigation scheduling, soil management, and other such technologies may offer additional water savings.

Continued investments in research, educational outreach, technical assistance, and financial incentives are needed to ensure that the agricultural sector continues to thrive as producers and irrigation districts continue to adopt practices that result in significant water savings for the benefit of all Texans.

The Council recommends that, subject to available state revenue for the 2020–2021 biennium, the Texas Legislature should maintain funding levels for agricultural water conservation research, education, training, conservation programs with best management practices that reduce evapotranspiration, and financial assistance programs focused on improving water use efficiency in agricultural irrigation.

5. Restore funding for the Texas Ag Water Efficiency Education and Demonstration Project facility.

From 2004 to 2015 the Texas Water Development Board's Agricultural Water Conservation Grants Program funded a project known as the Texas Project for Ag Water Efficiency[1]. This project demonstrated the various types of irrigation on farms in the Lower Rio Grande Valley to assist farmers in implementing conservation measures that would conserve water and maintain the economic viability of their farming practices. Out of these demonstrations, operations were converted to better irrigation practices both by the farmers and the districts.

A component of the project was the construction of a meter calibration and educational center for the demonstration, education, and research of agricultural water conservation measures, tools, and technologies. This million-dollar facility is the only one of its kind in Texas and one of only a handful nationwide. Water managers and employees from across the state utilized these facilities to educate personnel on the refinement of agricultural water measurement and delivery.

Efficient low-cost automated canal gates operated on solar or wind generator power were developed using this facility as were Supervisory Control and Data Acquisition (SCADA) systems for automated water delivery. Developments from this center have been adopted by several districts in the Lower Rio Grande Valley as well as the El Paso County Water Improvement District #1 and the Lower Colorado River Authority. Four of the Blue Legacy Awards for agriculture have been awarded to recipients related to this project.

During the active project period, the Harlingen Irrigation District hosted more than 20 workshops, seminars, and other such training events at the Rio Grande Center for Ag Water Efficiency. These educational opportunities allowed for water providers and agricultural producers to not only gain knowledge on developing technology and conservation strategies but also established a dialogue between the producers and water providers to further

[1] More information available at: https://texasawe.org/

innovations.

As surface water irrigation is still the largest user of water in several areas of the state, this facility has the potential to play a significant role in the education, research and development of water conservation initiatives for irrigated agriculture. Despite initial investment, this facility is no longer being used to its full potential.

Restored funding will enable the maintenance, improvement, and expansion of the mechanical and technological components of the facility; which in turn, will allow for the growth of educational and research opportunities. As innovative water conservation technologies continue to evolve, the vision for the Rio Grande Center for Ag Water Efficiency is to use the facility as a hub to demonstrate the relationship between effective on-farm and district delivery systems and educate both agricultural producers and water providers on proven water conservation technologies that are available to modernize their operations.

The Council recommends that, subject to available state revenue for the 2020-2021 biennium, the Texas Legislature fund this project for the education, research, and development of agricultural water conservation initiatives at $150,000 to $200,000 per year, through general revenue appropriations deposited and distributed through the TWDB's Agricultural Water Conservation Grants Program, and establish this level of annual funding through baseline general revenue appropriations to the TWDB in future years.