THE COMING CRISIS:

Water Availability and Municipal Conservation Efforts in Central Texas

CLEAN WATER FUND

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Executive Summary

Population growth, drought, and climate change are straining the water supplies of Texas communities. Our state's population is projected to double by 2060. Much of the state is in the throes of a prolonged drought. Climate experts are predicting that the U.S. Southwest will grow significantly drier and hotter in the coming years. The combined challenges of climate change, drought and population growth make it clear that many Texas communities will be increasingly burdened with the responsibility of parceling out a diminishing supply of water to an increasing number of customers.

Nowhere in Texas are these issues more acute than in Central Texas — which is projected to grow at a faster rate than most of the state and is currently in the midst of extreme drought. This study analyzes the challenges posed by population growth, drought and climate change for water availability, as well as the responses to date of Central Texas communities in the Austin-Round Rock Metropolitan Statistical Area (Williamson, Travis and Hays Counties). Our analysis concludes that, while almost all communities within this area are taking additional steps to conserve water, few are embracing the full range of options readily available.

In recent years, the State of Texas has made progress in promoting water conservation. The Texas Water Development Board (TWDB), acting in accordance with state law, now requires that each city with 3300 or more retail water connections submit a water conservation plan at regular intervals. In addition, the TWDB has recommended that cities attain an average water consumption level of 140 gallons per capita per day or lower (a number arrived at by dividing a given community's population into the total number of gallons retail customers, including non-residential customers, consume an average day). However, the 140 gpcd level is only a recommendation, and the Texas Legislature has not delegated to the TWDB or any other state agency the ability to require that cities lower their consumption rates.

Many American cities — including San Antonio — have implemented aggressive water conservation programs that have stretched water resources. Their example has demonstrated that the most affordable method of meeting water needs is conservation. However, as this report shows, most cities within the Austin region, including Austin and its fast-growing neighbors in Williamson County; continue to place primary emphasis on additional treatment and distribution capacity rather than conservation.

This study surveys some of the best practices that cities in Texas and elsewhere have implemented to conserve water. It reviews the close connection between energy production and water consumption. It offers recommendations that both homeowners and municipalities can take to stretch water resources and conserve financial resources. We hope that this study will prod cities in Central Teas to move beyond the tentative first steps that most Central Texas communities have taken.

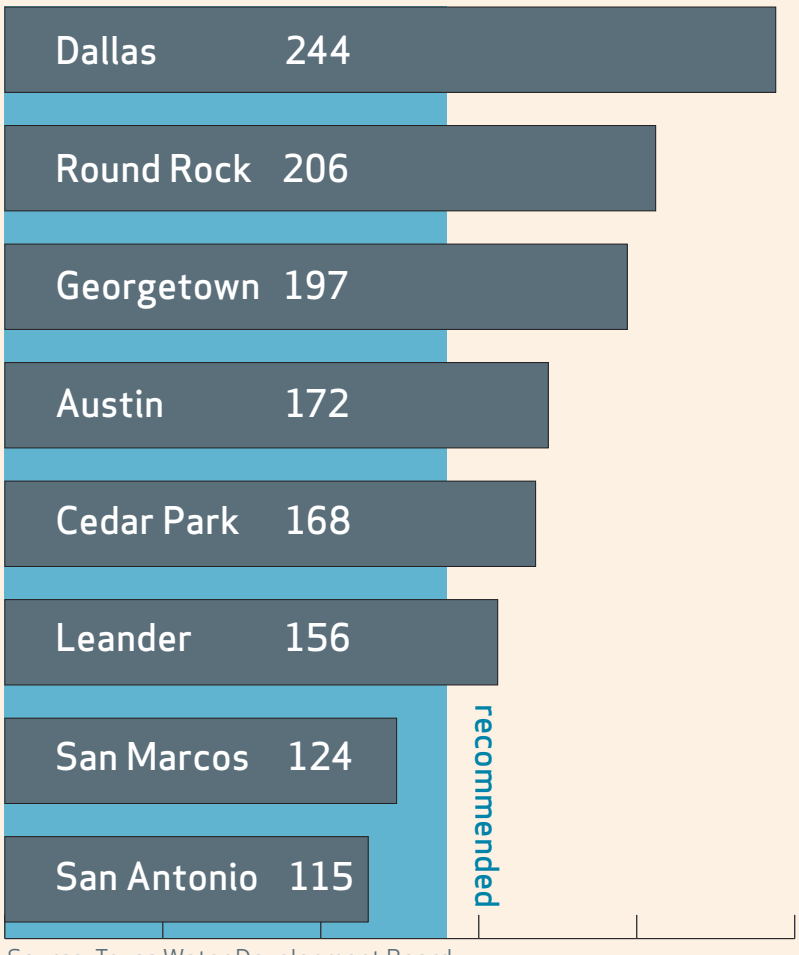
I. Introduction: Water Scarcity in Texas

Texas is fortunate to enjoy a rich aquatic heritage, with nine major aquifers, 15 major rivers, and some 3700 streams. In addition, more than 360 miles of coastal waters provide habitat for countless species and support multi-billion dollar tourism and commercial fishing industries. Over 200 reservoirs provide drinking water storage for millions of Texans.

Population growth, drought and climate change are placing these resources at risk. Our state's population is projected to double by 2060, with most newcomers settling in metropolitan areas. Booming urban areas are drawing more water from rivers and aquifers, thereby lowering aquifer levels and reducing instream flows vital for downstream habitat and coastal bays and estuaries. Climate change is altering traditional patterns of rainfall and increasing rates of evaporation, with experts warning us that the historic 'drought of record' can no longer serve as the basis for projecting future water needs and availability. Much of our state is in the throes of a severe drought, and a recent study by the United States Geological Survey concludes that in much of the American Southwest — including parts of Texas — this drought may endure for several decades, emulating the 'mega-droughts' not seen in North America in centuries.[1]

Senate Bill 1904, passed by the Texas Legislature in 2003, created the Water Conservation Implementation Task Force to evaluate and recommend strategies on conservation. Composed of a variety of stakeholders, the Task Force recommended that municipalities lower water consumption levels to 140 gallons per capita per day (gpd) by 2060.[2] The Texas Water Development Board, the agency most responsible for meeting water needs for the future, supports this recommendation. However, this remains a goal and not a requirement, and few cities are implementing plans to reach it. Central Texas cities in particular are experiencing dramatic population growth while for the most part neglecting to develop comprehensive plans to conserve water.

This paper will briefly describe the challenges facing future water supply in Texas and offer recommendations on how to meet these challenges. It does not pretend to be an exhaustive study of the complexities of water conservation, climate change or drought, but is meant to underline the imperative need for communities in Central Texas — which here refers primarily to what the U.S. Census Bureau call the Austin- Round Rock Metropolitan Statistical Area, comprised of Travis, Hays, Williamson, Bastrop and Caldwell counties — to implement comprehensive plans to conserve water.



Source: Texas Water Development Board

II. Central Texas—Population Growth, Drought

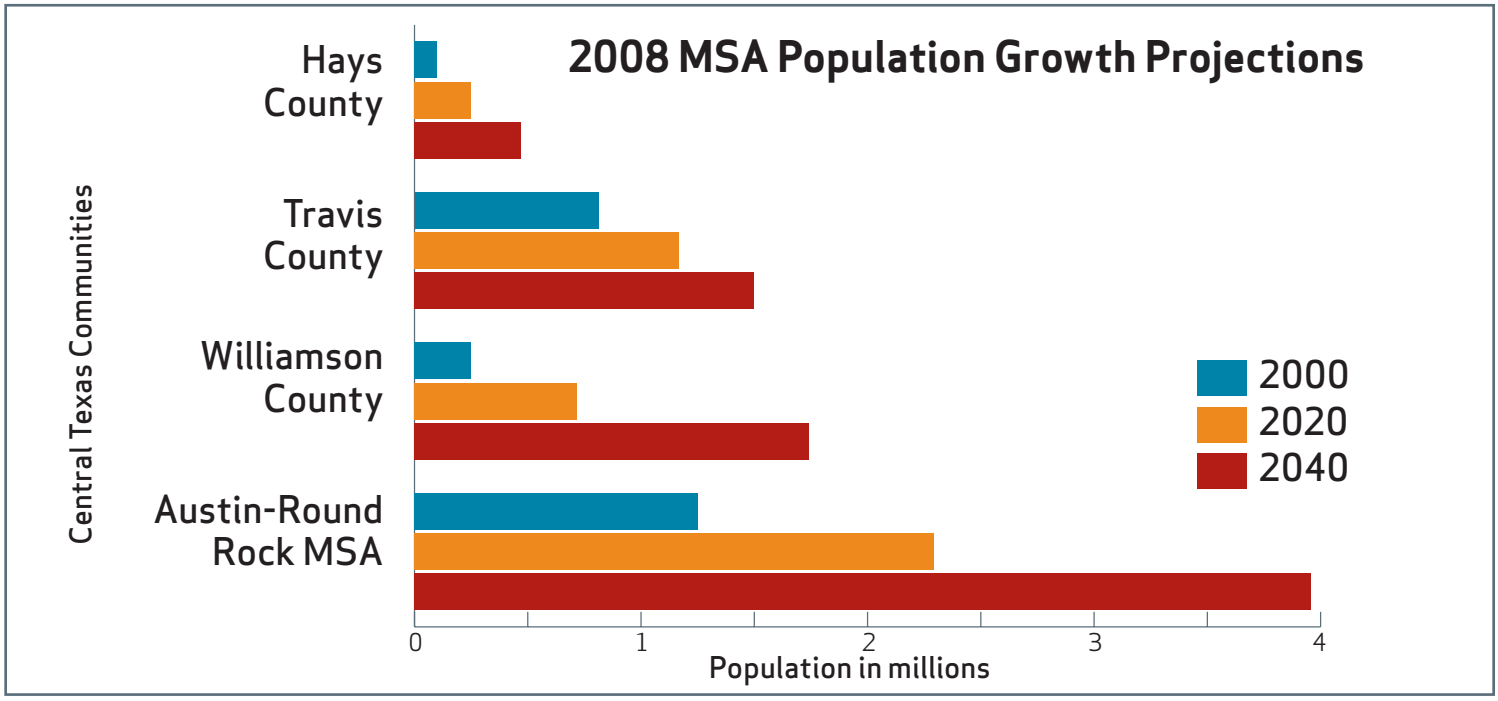
In no part of the state are the implications of population growth, drought, and climate change on future water availability more serious than they are in Central Texas. While state's population is projected to double by 2060, the Austin area has historically doubled at a faster rate, about every 20 years; this trend continues.

The Texas State Data Center estimates that the Austin-Round Rock MSA — the fifth fastest growing MSA in the nation — jumped from just under 1,250,000 to almost 1, 600,000 people between 2000 to 2008 — an increase of 27%. Williamson County's population jumped the most, by 53%.[3]

Even as its population continues to soar, Central Texas finds itself in the midst of its most serious drought in decades. Fully eighty-eight percent of Texas is now experiencing abnormally dry conditions, with 18 percent of the state in either 'extreme' or 'exceptional' drought conditions. Hardest hit are the counties in and around Austin and San Antonio. The U.S. National Drought Monitor places most of Central Texas and the adjacent eastern Hill Country in the 'exceptional' drought category, the worst of four categories of drought, with most locations receiving less than half of normal rainfall. Current dry conditions here have been exceeded only once in recorded history, during the drought of 1917-18. Notwithstanding an unusually wet year in 2007, dry conditions have generally persisted since 1998.

With rapid population growth and less rainfall, demand for water is outpacing supply. Well levels in Bastrop, Williamson, and Travis counties have declined "steadily and deeply" since 1996, according to one recent report.[4] The Lower Colorado River Authority reports that amount of water flowing into Lake Buchanan and Lake Travis — the only two water supply reservoirs in the Highland Lakes chain — is at its lowest level since 1942, when the two water supply reservoirs began operating in tandem. In August 2009, the reservoirs stood at only 42% of their storage capacity, and lake levels fell to their third lowest levels ever. Inflows into the Highland Lakes were only 22% of normal in 2008, and are only 23% of normal so far in 2009. Even if rainfall levels return to normal through the January 2010, the amount of water in the two reservoirs would remain at current low levels.[5]

Similarly, the water level in Lake Georgetown, which provides drinking water to the cities of Round Rock and Georgetown and various municipal utility districts, now stands at 23 feet below normal. The Brazos River Authority is urging its customers who use this lake to reduce water use by 20%. The BRA has been pumping 27 million gallons of water per day into it Lake Georgetown from Stillhouse Hollow Lake, near Belton. "They're pumping as much as they can pump," BRA spokesperson Matt Phillips said of the two pumps used for this purpose. "And the water is being used faster than we can bring it in." Two additional pumps are expected to be available in 2011, at a cost of $5 to $7 million. [6]



III. Climate Change

One of the most important considerations facing water planning efforts is, or should be, climate change. So far, our state's leadership, including the Texas Water Development Board, is refusing to take climate change into account when planning long-term water policy. The TWDB's 'Water for Texas 2007' plan states point blank: "When considering the uncertainties of population and water demand projections, the effect of climate change on the state's water resources over the next 50 years is probably small enough that it is unnecessary to plan for it specifically."[7] Critics have argued that this sentiment is politically motivated and point to the well-known skepticism on climate change by Governor Rick Perry and Lieutenant Governor David Dewhurst.

This sentiment stands in direct contradiction to the overwhelming scientific consensus that has emerged on the reality of climate change and of the contribution of human activity to it — chiefly through the burning of fossil fuels. According to Katharine Hayhoe, a Texas Tech University geoscientist, scientific modeling points to a likely increase in Texas' winters of 2 to 5 degrees Fahrenheit on average by mid-century, while summers can be projected to warm by 4 to 11 degrees in the same time frame.[8]

Gerald North, distinguished professor of geosciences at Texas A&M University, points out that Texas' average temperature has already increased by 2 degrees Fahrenheit in the last three decades as the world also has warmed. He adds that as temperatures continue rising throughout the century, precipitation would have to increase 25 percent to 40 percent by 2060 to maintain current water volumes in the state's rivers and lakes. This is not likely to happen.[9]

According to the U.S. EPA, a warmer and drier climate would lead to greater evaporation, as much as a 35% decrease in stream flow statewide, and less water for recharging groundwater aquifers. Paradoxically, climate change, could give rise to increased intensity of rainfall when and where it occurs, resulting in flash flooding. Flash floods and higher intensity rainfall events are not typically conducive to the slow downward percolation process necessary for aquifer recharge.[10]

The implications of climate change for Central Texas are severe. It is no accident that population densities in the U.S. drop as one moves west of the 98th parallel. To the west of this line, which in Texas coincides roughly with IH 35, average rainfall has historically been less than 30 inches per year — not enough to sustain traditional European-style agricultural practices. What seems to be happening due to climate change, at least as far as Central Texas is concerned, is a shifting of this rainfall line to the east, with some climate experts forecasting a shift of as much as 120 miles to the vicinity of College-Station. The Austin area's climate, as the century unfolds, may come to resemble that of San Angelo — 230 miles to its west.

IV. New Water Treatment Plants for Central Texas?

Faced with the certainty of further population growth and the challenges of drought and climate change, one would think that Central Texas communities would be developing ambitious policies to conserve as much of the diminishing available water as they can. Sadly, notwithstanding some notable exceptions, most of the effort is centered on adding additional water treatment capacity instead.

Since the 1980s, the City of Austin has aspired to build a new water treatment plant to draw additional water from Lake Travis. Water Treatment Plant 4 (WTP4) would be capable of pumping an additional 50 million gallons of water per day (gpd) from Lake Travis in its first stage, and would be designed so that capacity could subsequently be increased in stages to up to 300 gpd. The estimated cost of the first phase of this plant is $800 million (including interest payments) and financing it would require a rate increase of 10-15% for residential customers.

While Austin continues plans to build WTP4, neighboring cities in Williamson County intend to construct a similar treatment plant, also drawing water from Lake Travis. Leander, Cedar Park and Round Rock have entered into an agreement with the LCRA to build a plant capable of providing up to 106 MGD when all of its stages are completed in 2028. The first phase of this plant would cost an estimated $90 million.

Opposition to both plants has emerged. Critics of WTP4 have argued that the city should instead promote conservation steps, beyond those it has already undertaken, before committing to such a costly undertaking. They suspect that once the plant is built, the incentive to conserve will diminish, as the utility would prefer to sell additional water to re-pay the bonds necessary to finance its construction.

Environmentalists have pointed to the successes of the city's recent water conservation steps as evidence that the plant may not be needed, and have called for a further delay to determine if additional conservation steps can postpone or prevent the need for WTP4. Opposition to the Williamson County plant has come mainly from lakeside communities who fear that another massive straw in Travis will deprive them of their views of the lake and for many of them, such as marina owners, their livelihood.[11]

Cypress Creek Park Boat Launch, Lake Travis; December 2008—Photo by Clean Water Fund.

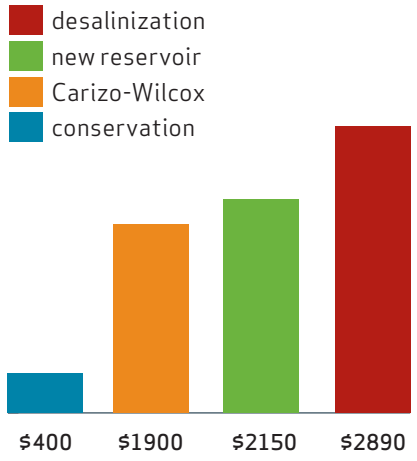
V. "Water Saved is Money Earned"—the Case for Conservation

A July 2009 study by the Lower Colorado River Authority analyzes projected water demand and the cost of various options for meeting it. The study makes clear that Central Texas will face serious water shortages as the century moves on, given projected population increases and current per-capita levels of water consumption. It analyzes a range of options to meet future needs, including piping water from the Carrizo-Wilcox Aquifer ($1900 per acre-foot), a coastal desalination plant to serve industrial demand ($2890 per acre-foot), building a new reservoir downstream and piping the water back to Central Texas ($2150 per acre-foot), and removing silt from the Highland Lakes to make the reservoirs deeper (a dramatic $263,000 per acre-foot). Water conservation proves to be by far the cheapest way to meet demand, at $400 per acre-foot. "Conservation," the report concludes, "is now widely accepted as the most cost-effective way to extend water resources."[12]

There is no shortage of examples of cities in the U.S. that have forestalled the need to build expensive new systems of treating and distributing water through conservation. Albuquerque has lowered peak demand by 14% since 1990. Phoenix' water conservation program saves an estimated 40 million gallons per day (mgd) — its conservation rate structure alone saves 9 mgd. Increased water use efficiency allowed Los Angeles to grow by about one million people over the last 25 years without increasing the total amount of water it uses. Here in Texas, El Paso reduced water consumption from 185 gallons per capita per day (gpcd) in 1994 to only 134 gpcd in 2007.[13]

Perhaps the most pertinent example of successful water conservation programs for Central Texas comes from Austin's neighbor 80 miles to its south: San Antonio. San Antonio's exclusive reliance on the Edwards Aquifer for drinking water, coupled with increased pumping due to population growth, long ago compelled it to develop an ambitious water conservation program. This program succeeded beyond initial expectations. Per capita water consumption fell from 220 gallons gpd in 1980 to 115 gpd in 2007. This reduction resulted in a decrease of overall usage of 3.3 million gallons between 1993 and 2004, while population in the city's service area increased by almost 230,000 over the same time frame. San Antonio's overall water use remained constant between 1987 and 2007, while population doubled.[14]

Cost of Water Supply Options (dollars/acre-foot)

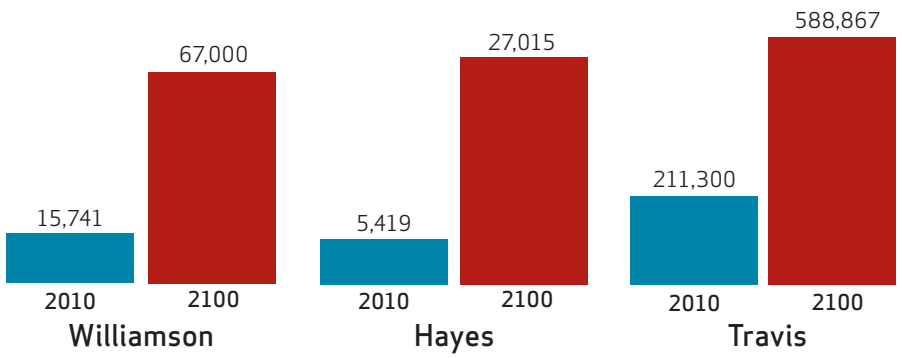


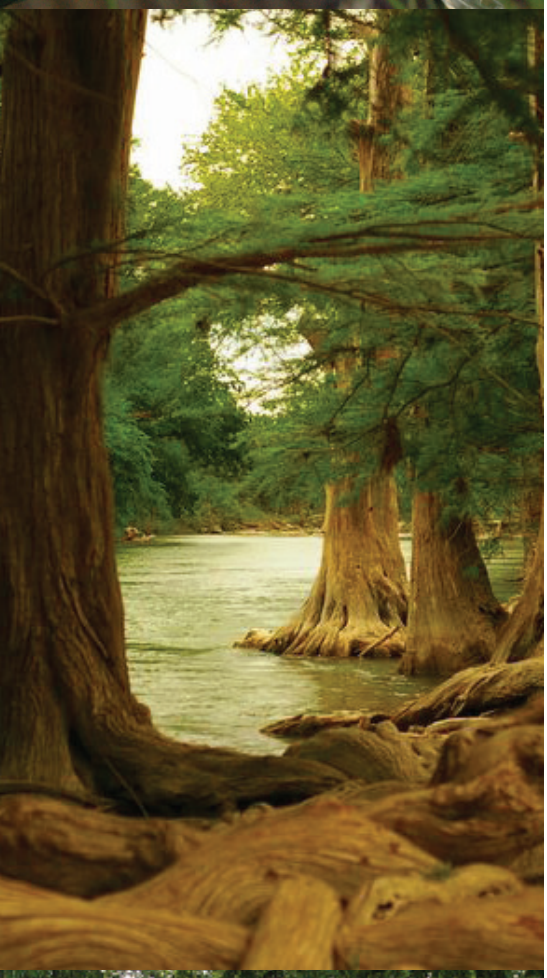
The San Antonio Water System (SAWS) estimates that its conservation programs have cost the city $210 million. But SAWS also reports that the estimated cost of procuring an equivalent amount of water, together with treating and distributing it, would have totaled at least $610 million and perhaps as much as $1.2 billion.

Water conservation programs have thus saved the City of San Antonio a minimum of $400 million. This does not reflect the amount residents have saved on their utility bills by using less water in their homes. "Water saved," concludes a recent SAWS report, "is money earned."[15]

Projected Future Water Demand for Central Texas Counties (acre-feet/year)

Source: LCRA





VI. Municipal Water Conservation Methods

A recent report published by the Alliance for Water Efficiency surveys successful techniques U.S. cities have used to reduce water consumption. They include:

- A comprehensive public education program that targets school-age children as well as the general public. Water efficient behaviors, the report states, can reduce urban consumption by as much as 35%, while public education can reduce it by 5-10%.
- Management programs that include leak detection and universal metering.
- Laws and regulations such as restrictions on when to water, rebates or requirements for drought resistant landscaping and plumbing retrofits, improved green building standards, and program that encourage rainwater harvesting and the use of gray water.
- Economic incentives that rewards consumers who conserve both water and energy via a tiered rate system, with penalties or surcharges on heavy users. The proceeds can be used to fund conservation programs.[16]

Among Central Texas cities, San Antonio has once again implemented the most comprehensive program. Its features include:

- An ambitious goal of lowering per capita consumption to 116 gal per person per day during normal conditions;
- A comprehensive public education program;
- Programs to encourage community involvement, e.g. one that awards nonprofit organizations who sign up at least 25 households for high-efficiency toilet installation;
- The nation's largest water recycling program, begun in 1996, capable of delivering one billion gallons of water each year to industrial and commercial customers — including the municipally-owned coal-fired power plant — through 100 miles of purple pipes;
- An aquifer storage program that removes water from the Edwards Aquifer during wet periods and stores it in the Carrizo Aquifer for dry periods;
- Promotion of energy efficiency and weatherization programs as ways to save both water and energy;
- Standards for car washes and prohibitions on charity car washes except at an approved facility;
- Incentives for restaurants that install efficient dishwashers and ice makers;
- Rebates of up to 50% for commercial enterprises that install water-efficient equipment (e.g., cooling towers, HVAC, water reclamation systems);
- Rebates of up to $250 for homeowners who replace water-intensive landscaping with native and drought-resistant plants, with follow-up monitoring by SAWS staff to prevent over-watering;
- Rebates of up to $150 for homeowners for installation of on-demand water heaters (capable of saving up to 10,000 gallons per year);
- Free water conservation audits, high-efficiency toilets, low-flow shower heads and faucet aerators;
- A multi-tiered residential rate structure that charges more for each incremental use of 100 gallons per month at its high end.

Austin has also made progress with its water conservation programs, though at a more modest level. The city has long offered rebate programs for low-flush toilets and other devices but stepped up water conservation planning in response to criticism over WTP4. Its Water Conservation Task Force, established in 2006, has offered a series of recommendations to conserve water, each of which cost less money to implement than procuring an equivalent amount of water. The city intends to implement these recommendations gradually over the next several years. Mandatory restrictions in summer lawn watering, along with a ramped-up public education program, led to a drop in peak water consumption in 2008.

Cities in Williamson County have also ramped up their water conservation programs, though at a more modest scale. Round Rock initiated a two-tier rate structure in December 2008 and now funds water conservation staff. The City of Georgetown plans to reshape its four-tier rate structure to encourage conservation; however, it still has only a voluntary program for summer lawn watering.[17] The Barton Springs Edwards Aquifer Conservation District, faced with alarming declines in well levels, has banned outdoor lawn watering altogether in areas within its jurisdiction (parts of southern and southwestern Travis County and most of Hays County).

Lawn watering restrictions are one of the simplest and most effective methods of reducing water consumption. In most urban areas in Texas, about 25% of total water use is for landscaping and garden watering, often for water-intensive turf grasses that are not well-suited to the climate. Irrigation can account for 50-60% of residential water use, and more than this during hot summer months. According to the EPA, as much as half of landscape watering nationwide is wasted due to overwatering, evaporation or wind.[18] Austin lawn watering restrictions, begun in 2008, limit household watering to two days per week from May 1 to September 30 and restrict watering times to the hours between 7 PM to 10 AM.

Austin suspended its residential rebate program for converting conventional landscapes to drought-resistant xeriscapes because customers who took advantage of this program did not on average experience significant drops in consumption levels. This is attributed to the tendency of customers to water their xeriscapes more than necessary. However, San Antonio's program has been more successful, due to monitoring of water consumption levels and follow-up as necessary by water utility staff; SAWS's program includes bonuses (in the form of credits on monthly bills) for customers who achieve significant water savings.

Significant reductions in water consumption can also be achieved through plumbing retrofits. About 75% of water used inside the home is used in the bathroom, with the toilet using more water than any other device. Toilets installed prior to new plumbing codes enacted in 1994 use three to seven gallons per flush, versus 1.6 gallons for water efficient models. An EPA-funded study concluded that high efficiency toilets can save approximately ten gpcd, while an EPA Energy Star washing machine can save five to seven gpcd. A household switching out old devices for modern water-efficient ones (such as low-flow faucets and aerators, dishwashers, clothes washers, toilets, and on-demand water heaters) can reduce per capita water consumption from 69 to 43 gpcd.[19]

An added benefit of lowering household water use is the reduction in energy consumption. While an estimated 8% of all U.S. energy use is attributable to treating and distributing water and wastewater, even more energy is consumed for heating water after it has arrived in the household. About 2% of energy used in the United States is associated with wastewater.

State law requires that all public water utilities providing drinking water to more than 3,300 connections submit a water conservation plan to the Texas Water Development Board by May 1, 2009. The table on the next page illustrates goals for 2015 per capita levels of consumption and indicates that many cities in Central Texas have not yet developed a plan to these levels to or below the TWDB's recommended 140 gpcd.

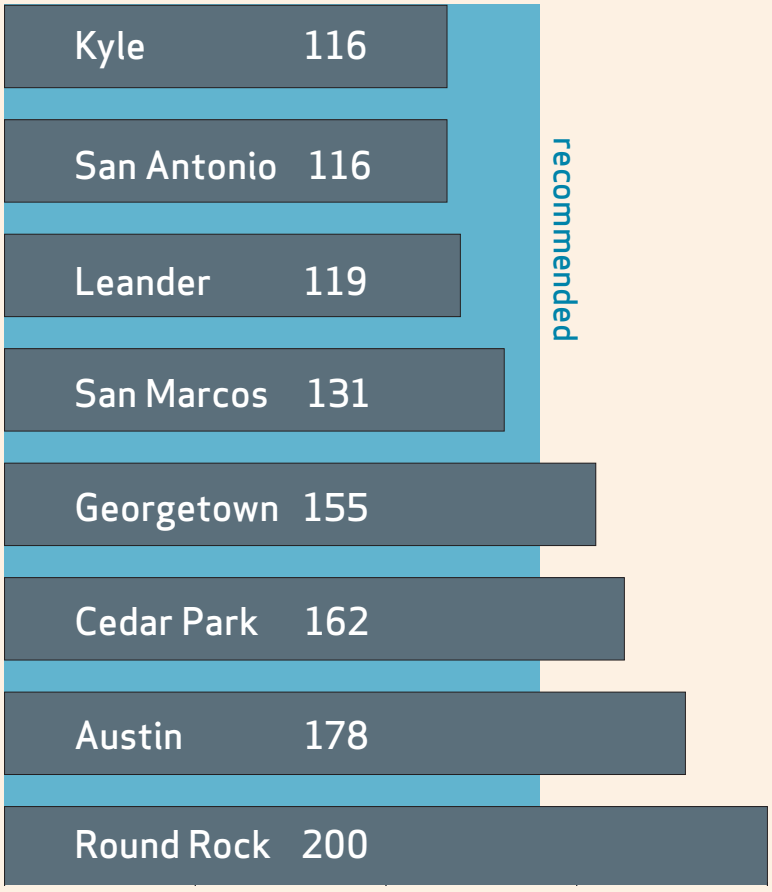
IV. Water for Energy: the Water-Energy Nexus

Texas' population expansion is also fueling a push for adding more power plants to the grid. Yet the most common way of producing electrical power — heating water into steam which then turns turbines that produce electricity — requires tremendous amounts of water. Additional power plants built on this model will exacerbate Texas' water shortage.

According to the EPA, electricity production is the largest single user of water in the nation. Power plants withdrew 408,000 million gallons per day from surface and groundwater sources in 2000. Agriculture ranked second, requiring 137,000 mgd in that year, while residential and commercial required 46,900 mgd. Nationwide, an average of 25 gallons of water are needed for every kilowatt hour of energy produced. As the nation's largest consumer of energy, Texas withdraws more water for energy production than any other state — 13,300 mgd in 2000. More than half of the water pulled from rivers in Texas is for electrical generation. The Lower Colorado River Authority estimates that about a fifth of the water drawn from the Colorado River each year between Austin and Matagorda is used by power plants.

About 85% of power plants in the U.S., including most in Texas, produce energy by boiling water to create steam, which then turns turbines to generate electricity. This is true whether the fuel is natural gas, coal, nuclear, biomass, or in more rare cases concentrated solar power (which focuses the sun's rays to boil water). Water used for steam is retained in a closed loop where it is heated by the fuel, then cooled back into water to be heated once again into steam. The coolant used in this process is typically water, brought in from a nearby source to dissipate the heat from the steam. Most of this cooling water used in this process is returned to the water body from which it was taken, but an average of around 2% is lost to evaporation. Dry cooling methods are problematic in Texas' hot climate.[20]

2015 Water Use Goals (gallons per capita per day)



Source: Texas Water Development Board

While the EPA estimates that an average of 25 gallons of water are used for each KwH of electricity generated nationwide, around 0.45 gallons are lost or consumed, mostly due to evaporative cooling. Nuclear energy is the thirstiest technology of all, with reactors consuming up to 0.72 gallons of water per KwH. All told, U.S. power plants consume 3.3 billon gallons of water each year.

As population increases, competition among the electrical, agricultural and municipal sectors for water is sharpening. The LCRA recently backed out of its plans to provide the San Antonio Water System (SAWS) with water from the Colorado River, and some have speculated that one important reason, perhaps the decisive one, is that three new power plants have been proposed that would use Colorado River water proved by the LCRA for cooling. Indeed, SAWS has filed suit against the LCRA for canceling this arrangement and asserts that the

LCRA's commitment to provide water for these power plants is the unstated reason for canceling the deal. This includes the two new nuclear reactors proposed at the South Texas Nuclear Project, in which San Antonio is part owner. San Antonio's electric utility is in effect competing with its water utility for water.

The electrical sector's need for vast amounts of water puts its reliability at risk in a time of severe drought and climate change. The 2007 and 2008 drought in the southeastern U.S. reduced the availability of cooling water to the point where power plants were within days of shutting down. The 2003 heat wave that took 15,000 lives in France forced nuclear plants to lower their output as river levels dropped.

To conserve energy is thus also to conserve water, and one of the easiest ways communities can reduce water consumption is to increase investments in energy efficiency and renewable energy. Unlike fossil and nuclear fuels, wind turbines and photovoltaic solar energy both use and consume no water at all, making them — along with energy efficiency — the fuels of choice from a water conservation as well as from a clean energy perspective. The TWDB estimates that the 6390 MW of wind installed in Texas by the end of 2007 replaced the need for 15 million gallons of water per day — equivalent to the needs of more than 45,000 Texas households.

In 1982, the City of Austin chose to invest in energy efficiency programs instead of building a new coal-burning power plant, offering customer rebates for high-efficiency HVAC systems, insulation, weatherization, and more. By 2008, these programs had saved an estimated 800 megawatts of peak energy demand. If we assume the TWDB's average consumption rate of 0.35 gallons per KwH, an 800 MW peaker natural gas plant operating at 15% capacity for one year would be expected to consume more than 367 million gallons of water — as much water as 3,600 average Austin households use in the course of a year. A base load nuclear plant operating at 70% capacity would consume over nines times as much water — enough for about 32,400 typical Austin households.

The City of Austin's energy conservation programs are often described as a 'conservation power plant' for the energy they have saved, and rightly so. They can also fairly be described as a water conservation plant.

Recommendations for Action

Faced with challenges posed by population growth, drought and climate change, cities in Central Texas clearly need to implement comprehensive programs to conserve water and energy and avoid the costs associated with new treatment plants and other infrastructure. The experience of San Antonio and other cities clearly shows that significant gains can be made. The chart below provides a sense of where selected Central Texas cities are in developing such programs.

Municipalities in Central Texas should adopt the following actions in order to reduce their water consumption:

- Set ambitious goal with plans for lowering per capita consumption to 140 gpd or lower;
- Comprehensive public education that includes elementary age children;
- Stronger Plumbing Standards to reduce toilet flow rate from 3 gallons to 1 gallon per flush, reduce faucet flow rate from 2.75 to 1.5 gallons/minute, and reduce shower flow rate from 3 to 2 gallons/minute;
- "Report card"-style billing statements that not only tell customers how much water they used, but also informs them of how they rank among their neighbors.
- Aggressive programs to reduce water loss to leaks;
- Ambitious water reclamation programs;
- Aggressive rebate programs for water and energy efficient appliances;
- Stricter controls on dry cleaners and charity car washes;
- Permanent limits on summer lawn watering;
- Bans on certain kinds of landscaping in all new subdivisions and minimum requirements for soil depth;
- Financial incentives for replacing water-intensive turf grasses with drought-resistant plants;
- Tiered rate structure with that rewards conservation and increases cost for each incremental use in water.

Comparison of Central Texas Municipal Water Conservation Measures

Incentives or programs	*San Antonio*	*Austin*	*Round Rock*	*Leander*	*Cedar Park*	*Kyle*
Low Flow Toilet	Yes	Yes	No	No	No	No
Efficient Washing Machine	Yes	Yes	No	No	No	No
Rain Barrel Rebates	Yes	Yes	No	No	No	No
Tiered Rate Structure	Yes, 4 tiers	Yes, 4 tiers	Yes, 2 tiers	No	No	No
Rebates for Drought Resistant Landscaping	Yes	No	No	No	No	No
On-demand Water Heaters	Yes, up to $150	Yes, if replacing electric	No	No	No	No
Free Low-flow Shower Heads and Aerators	Yes	Yes	No	No	No	No

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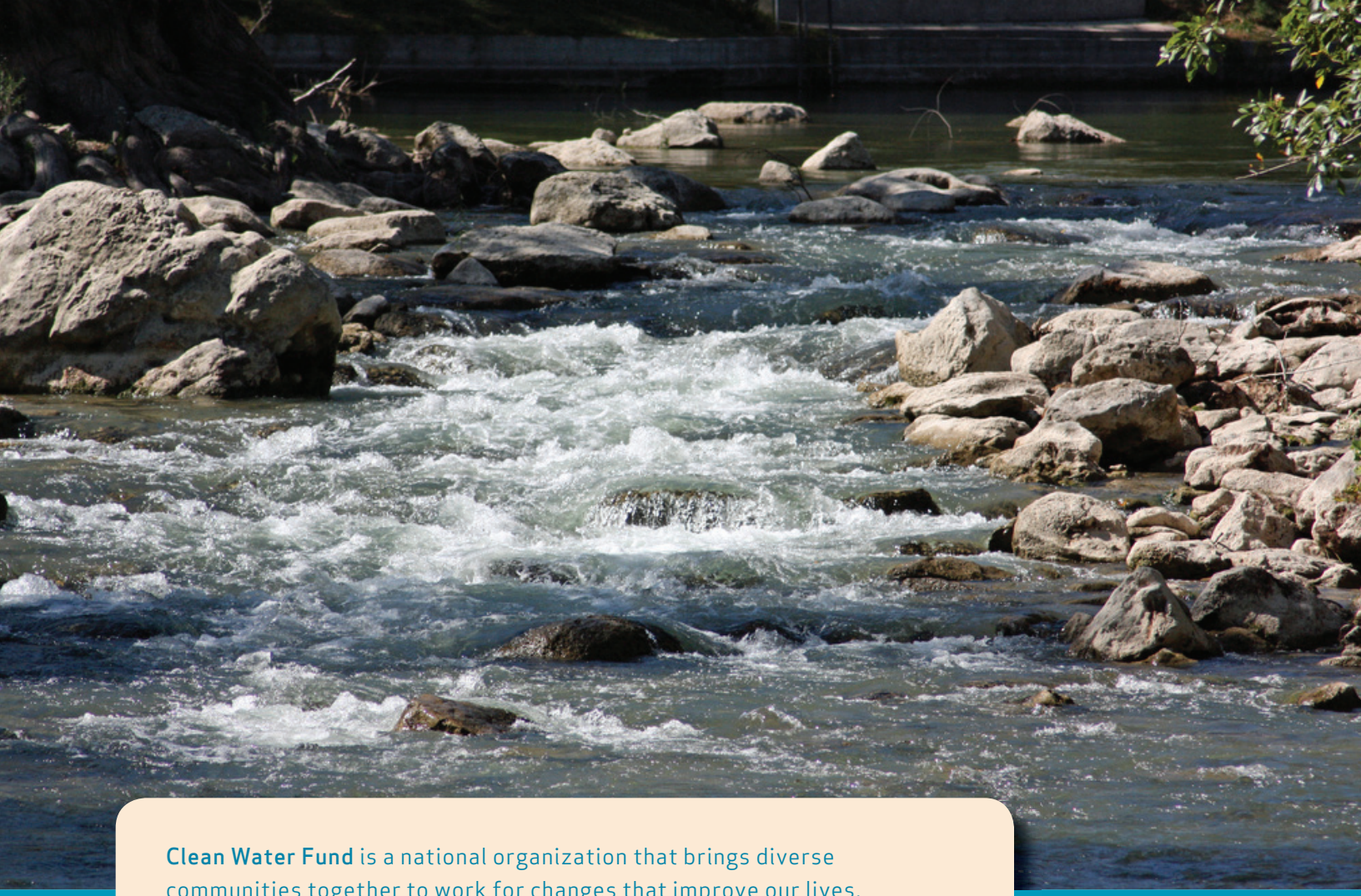
20. Texas Water Development Board, "Power Generation Water Use in Texas," January 2003.



Clean Water Fund is a national organization that brings diverse communities together to work for changes that improve our lives, promoting sensible solutions for people and the environment. We all live downstream. To secure clean, safe and affordable drinking water for present and future generations, we must protect and conserve land and water resources today. In Texas, our current focus is on water conservation and on clean, renewable energy.

David Foster is a native Texan and has served as Texas Program Director for Clean Water Fund since 2004, where he coordinates public outreach to numerous Texas communities, elected officials and regulatory agencies. Foster serves on the board of many non-profits and has taught university-level classes in history and government. He and his wife Virginia have two grown children and three grandchildren.

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