

Texas Public Policy Foundation

The Case for a Texas Water Market



Kathleen Hartnett White
Carlos Rubinstein
Herman Settemeyer
Megan Ingram
April 2017

April 2017

Texas Public Policy Foundation
by Kathleen Hartnett White
Carlos Rubinstein
Herman Settemeyer
Megan Ingram



Table of Contents

Executive Summary	3
Introduction.....	3
State and Regional Water Planning in Texas.....	5
Drought-Driven Water Policy	6
Twenty Years of Water Legislation.....	8
Property Rights in Water Are Essential to Securing Adequate Water Supply and for the Establishment of Effective Water Markets	9
Groundwater	11
Groundwater Conservation Districts	12
Opportunities for Groundwater Reform— Recommendations	13
Surface Water	14
Permit Amendments.....	14
Interbasin Transfers and the Junior Rights Provision.....	14
The Rio Grande Water Market and TCEQ Watermaster Program.....	16
Environmental Flows.....	17
Opportunities in Surface Water Reform— Recommendations	17
Conclusion.....	19
References.....	20
Acronym Key	21
About the Authors.....	22

The Case for a Texas Water Market

by Kathleen Hartnett White, *Director, Armstrong Center for Energy & Environment*
Carlos Rubinstein · Herman Settemeyer · Megan Ingram, *Research Assistant*

Executive Summary

SB 1 (1997) envisioned that Texas would develop a water supply that could meet increasing demand, predominantly through voluntary redistribution of existing water supply. With some notable exceptions, such voluntary transfers within water markets have not widely occurred. Texas needs water markets that allow market participants to value water based on voluntary exchange, accurately assess available information about state natural resources to more rigorously estimate current and future demand, and to determine optimal strategies to supply the water we need. It's time to make the hard decisions necessary to ensure that voluntary transfers and marketing of existing water rights may occur. Reform of state laws, regulations, and policies that currently obstruct such transfers is necessary. Under existing conditions, the voluntary transfer and marketing of water rights, as we've seen, will be significantly hindered.

The public policy benefits of water markets are numerous. One of those benefits would be the opportunity to move surplus water where available to where it is needed. As articulated by the Western Governors' Association and Western States Water Council, water transfers are voluntary and flexible by nature. Voluntary transfers decentralize decision-making, provide economic incentives for water conservation, allocate water to new uses, and drive investment. In a functioning water market, potential buyers and sellers of water rights could take into account such considerations related to a transaction as size, cost, timing, distance, duration, means of conveyance, water quality, groundwater recharge, local government, and the environment.

Introduction

Home to 15 major river basins, eight coastal basins, nine major aquifers, 21 minor aquifers, 191,000 miles of streams, and more than 350 miles along the Gulf Coast, Texas is blessed with prodigious water resources ([TWDB 2015](#); [NMFS](#)). This doesn't mean, of course, that the Lone Star State hasn't faced challenges in meeting water demand. The extreme drought from 2011-2013 is a reminder of how quickly damaging water shortages can occur. After twenty years of regional and state water planning, few water supply strategies identified in regional plans have been implemented and few water markets have emerged as envisioned in the landmark water legislation known as SB 1.

Water is essential to all life, our economy, quality of life, and our environment, and is referred to by many as our most "valuable" resource. However, when it comes to the "value" of water in Texas, as in most western states, the discussion is complicated—much like our water law. How Texas has historically chosen to manage water, be it surface water or groundwater, has hindered the ability of participants to arrive at a market valuation of the resource. Texas needs a well-functioning water

Key Points

- Codify the legal scope of property rights in water, as acknowledged by Texas courts, into statute and into the regulations and practices of the TCEQ and groundwater conservation districts.
- Enable the operation of fully functioning water markets that can facilitate voluntary water transfers, in contrast to the current law that prevents movement of water.
- Allow the development of market prices that can transmit the information needed for a fully functioning water market, including the determination of available supplies of water during all conditions and how firm that water supply would be during a drought, so that market participants can accurately assess the value of water.
- Amend the junior rights provision to modify the loss of the seniority of the transferred water right to facilitate interbasin transfers.
- Increase the use of the TCEQ's watermaster program that can better take into account the regulatory factors, infrastructure costs, historical factors, and the dynamic nature of the value of water to facilitate voluntary transactions.
- Water right amendments for changes that have no impacts on existing water rights or the environment should be clarified, simplified, and incentivized without the burden of extended administrative hearings.

market that allows participants to arrive at a true market value for water in order to meet Texas water needs as it responds to a growing population and economy, shifting patterns of use, and changing weather conditions.

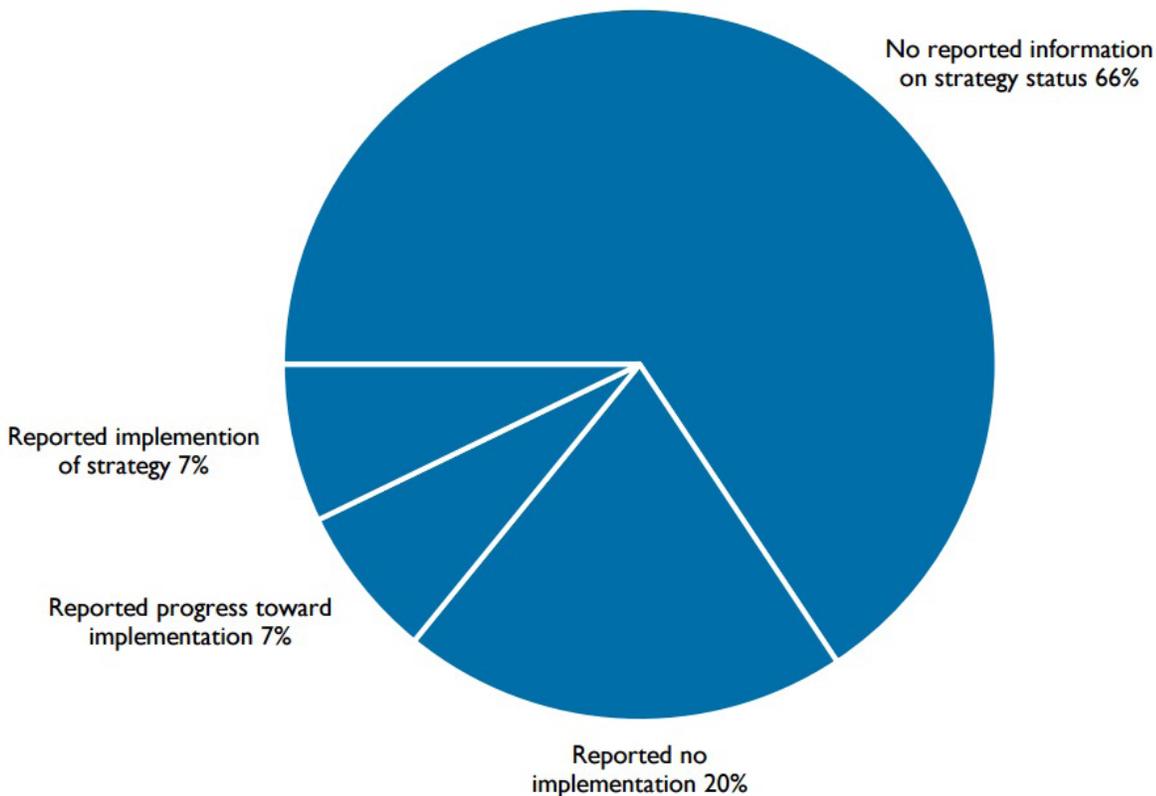
In 1997, the Texas Legislature passed SB 1, the first of the state’s four major water bills, to develop a comprehensive solution to Texas’ water supply challenges. In the bill, the Legislature made clear that the new state water planning process must facilitate water markets that allow “voluntary redistribution of water resources” (SB 1, 2). The Legislature also instructed regional planning groups to provide in their plans for the “voluntary transfer of water within the region using, but not limited to, regional water banks, sales, leases, options, subordination agreements, and financing agreements” (SB 1, 6-7).

The Texas Legislature has also long supported private ownership, voluntary transactions, and competitive markets as driving factors for other arenas. And such market-focused policy is a major reason why Texas is the nation’s leader in job and economic growth. Around the same time as it passed SB 1, the Texas Legislature also emphasized the

value of competitive markets in electricity in 1995 and 1999, in telecommunications in 1995 and 2005, and in insurance in 2003. The Legislature also reinforced the values underlying markets when it passed major reforms to Texas tort law in 2003 and 2005 and upheld property rights in 2005 and 2011.

The creation of water markets is critical to allowing the proper valuation of water that allows for the voluntary exchange and transfer of water rights and water. Effective water markets that allow competing users to value water incentivize four things: conservation, movement of water to higher end uses, protection of environmental flows, and ability of water right owners to sell all or a portion of their water as anticipated in SB 1. Twenty years later, we have the experience to determine where Texas water laws got it right and where some needed adjustments are required. In the short term and the long term, Texas must develop competitive water markets that will allow Texans to provide an available supply of water to meet the demands of our diverse, growing economy, a rapidly growing population, and intermittent droughts.

Reported implementation of all recommended water management strategies from the 2012 State Water Plan by share of total number of strategies



Source: [TWDB](#)

State and Regional Water Planning in Texas

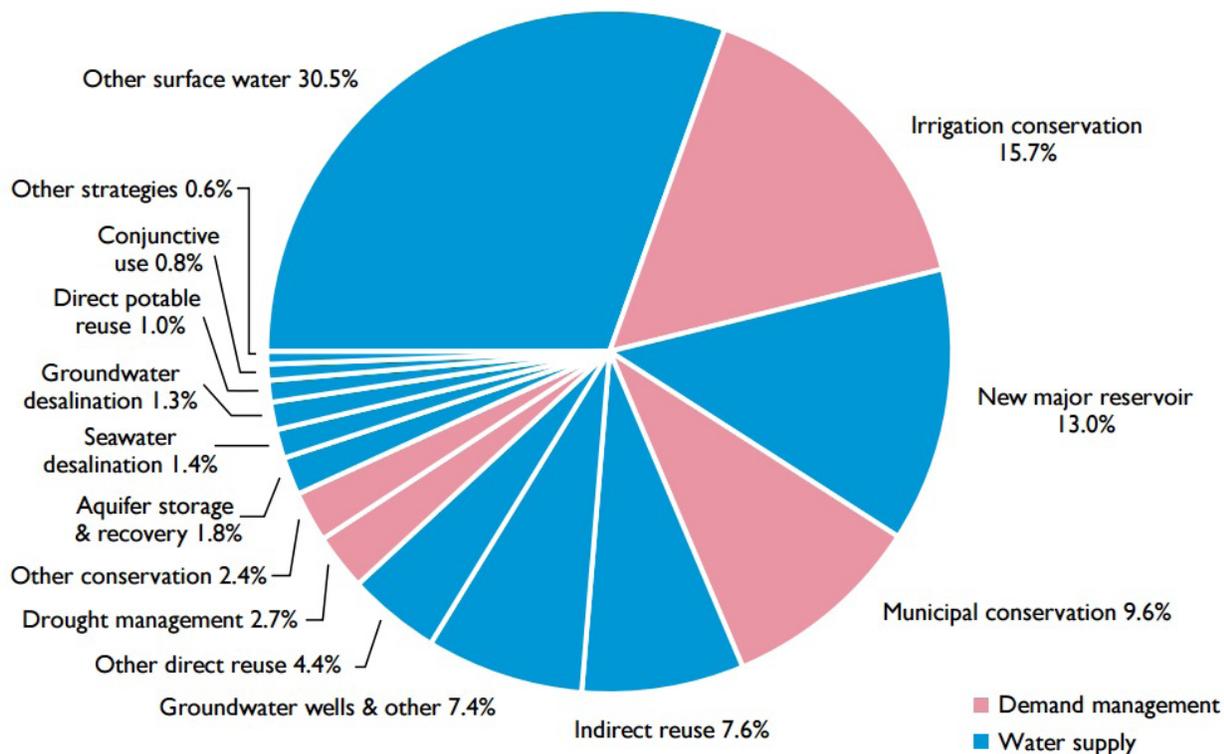
The first State Water Plan (SWP) was produced in 1961 in response to the drought of record in the 1950s. The plan “contemplate[d] the use of both surface and underground water to meet [the] projected 1980 annual demand” (TWDB 1961). Since then, another nine SWPs have been issued. In 1997, SB 1 created a new planning process to create regional water planning to be compiled into an SWP every five years. The Texas Water Development Board (TWDB) explains the development and focus of the SWPs under the SB 1 process:

Development of the state water plan is central to the mission of the TWDB. Based on 16 regional water plans, the plan addresses the needs of all water user groups in the state – municipal, irrigation, manufacturing, livestock, mining, and steam-electric power – during a repeat of the drought of record that the state suffered in the 1950s. At the end of each five-year regional water planning cycle, agency staff compiles information from the approved regional water plans and other sources to develop the state water plan,

which is presented to TWDB's governing Board for adoption. The final adopted plan is then submitted to the Governor, Lieutenant Governor, and the Texas Legislature (TWDB 2017b).

The focus of the water planning process in Texas is from the bottom up, based on the 16 regional water plans. Recall that the SWP is a compilation of regional plans. The TWDB has limited regulatory authority to alter the regional plans unless there is an unresolved conflict between regions, conflict as to source of water, or by requested amendment from the regional planning group. And the TWDB is not obligated to implement the regional plans. Yet, the process is focused on administrative consistency rather than catalyzing action in the private sector. At one level, this makes sense: the state owns the surface water in Texas, and public river authorities hold the majority of that surface water in rights issued by the state. The river authorities then sell water by contracts with municipalities and local water districts. However, if Texas is ever going to develop effective water markets to efficiently and affordably provide for the state’s future water needs, the

Share of recommended water management strategies by strategy type in 2070



Source: TWDB

planning process should be at the vanguard of pointing the way toward a fully functioning water market.

While the overall water planning process in Texas has received recognition and praise from across the country, the fact that the overwhelming majority of water management strategies in the SWP remain to be executed points to problems with its centralized nature. Only 14 percent of the over 3,000 water supply strategies in the 2012 SWP have reported any progress over the last five years. They remain simply strategies on paper.

The 2017 SWP continues to rely on a significant number of new large surface water reservoirs without acknowledging the costly, lengthy, and potentially insurmountable federal and state permitting procedures to build these reservoirs. To be sure, a few of these reservoirs may be permitted and constructed, but as pointed out at a recent interim session hearing, the majority of the reservoirs will not come to fruition in our lifetime, if ever. This unwarranted reliance on reservoirs can be attributed to the lack of a fully functioning water market that would bring online more cost effective and efficient means of meeting future water needs, either through better water supply development strategies or surface and groundwater transfers and exchanges.

In 2011, the 82nd Legislature adopted language requiring that future water plans incorporate “an evaluation of the state’s progress in meeting future water needs, including an evaluation of the extent to which water management strategies and projects implemented after the adoption of the preceding state water plan have affected that progress” (TWC 16.051). The newly adopted 2017 SWP incorporates this review. The Legislature should consider strengthening this requirement to include a more detailed review of strategies that were not implemented in the decade of need, yet remain in the plan, or are extended to a decade of need later in the planning horizon. A more critical concern is retaining a strategy in the plan that simply, on paper,

meets a future need, but whose actual implementation is not likely. Beyond this, the Legislature should also look to enabling market mechanisms for the private development of water supplies.

Drought-Driven Water Policy

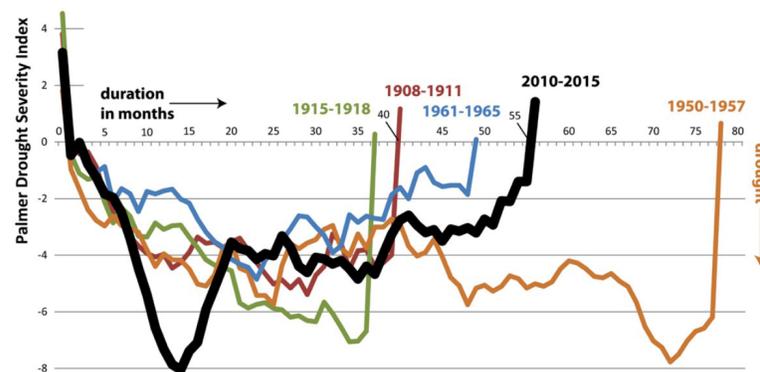
Droughts have driven water policy in Texas. This is evident in a quote from the 1961 plan: “Nature within the past decade has inscribed upon the wide-spreading Texas landscape grim warnings of greater disasters to come if development of the State’s water resources is neglected” (Texas Board of Water Engineers, 5). Under Texas law, formulation of supply strategies is based on water availability able to meet demands during a repeat of the conditions

during the decade of the 1950s, the worst drought in state history. Worth noting is the likelihood that short-term droughts, such as what we experienced in 2011, can temporarily rival in intensity or severity the drought of record of the 1950s. Studies have yet to be undertaken to completely evaluate the

differences of the drought of record in the 1950s and the intense but briefer drought in recent years. If the drought of record metric is altered to reflect acute, brief droughts, the Texas Commission on Environmental Quality (TCEQ) will need to update many existing Water Availability Models (WAMs).

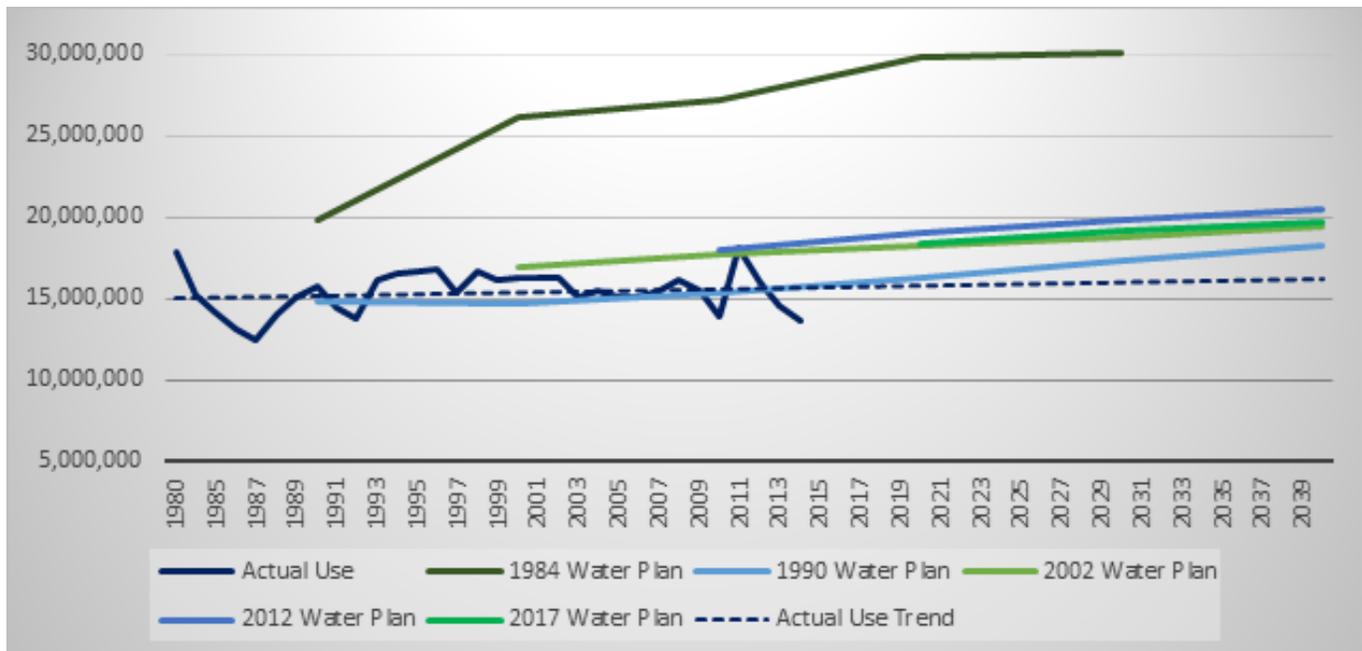
However, using the drought of record may not provide the best understanding of Texas’ future water needs. Projections made by each of Texas’ 16 regional water planning groups (RWPGs) attempt to forecast the state’s future needs. These projections, compiled by the TWDB in the 2017 SWP, conclude that under drought conditions, existing water supply will be 3.2 million acre-feet short of existing demands in 2020. Under conditions of a drought of record in 2020, Texas would need an annual increase of 4.8 million acre-feet to the existing water supply to avoid water shortages. Long-term water shortage is also an issue. Between 2020 and 2070, the state’s population is projected to grow from 29.5 million to 51 million. The 2017 SWP

John Nielsen-Gammon, State Climatologist)



Source: TWDB

Figure 2: Actual Use v. Water Plan Projections since 1980 (acre-feet)



Source: [Texas Water Plans](#)

concludes that Texas’ existing water supply of 15.2 million acre-feet must be increased by an additional 8.9 million acre-feet in 2070 to meet the needs of the state ([TWDB 2017](#)). Actual water use data from 1980 through 2014 paints a different picture for water needs on a year to year basis. While use in drought years will certainly increase, since 1994, water use on an annual basis has actually been trending down. The trend since 1980 is slightly upward. In both cases, however, projected use under average conditions is well below the projections in the 2017 SWP.

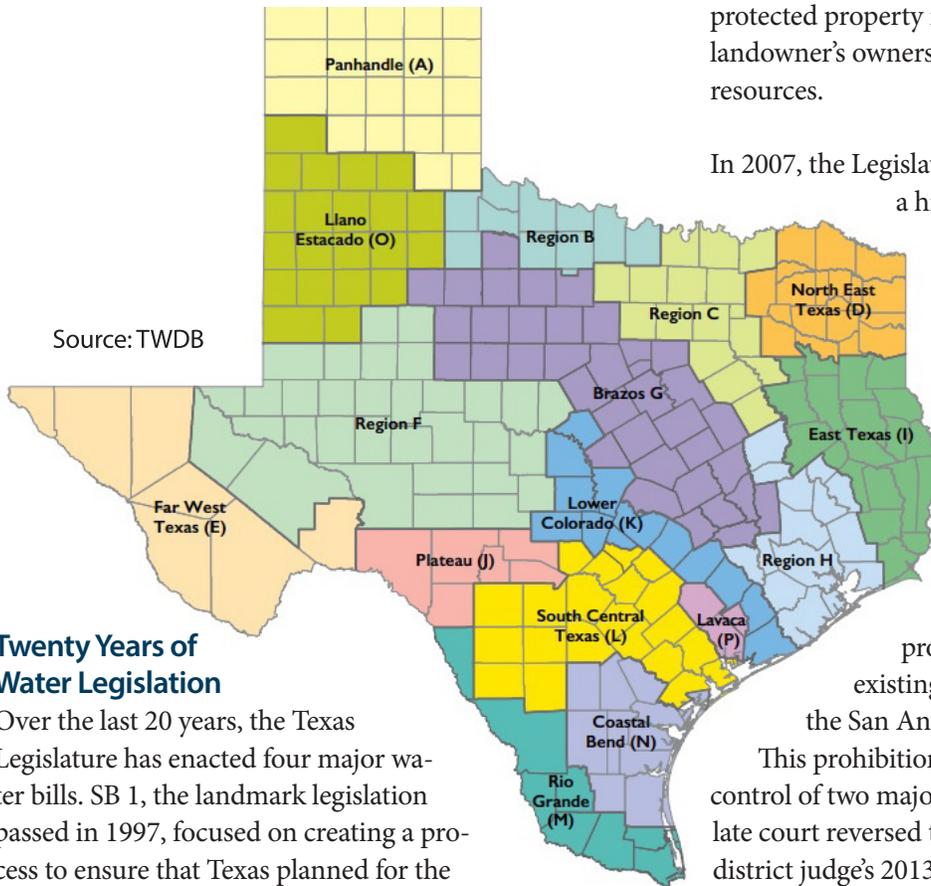
Demand Management

Generally speaking, “demand management” refers to reduced consumption through voluntary and mandatory water conservation, as well as technologically achieved water efficiencies. Within the water planning process, demand management is understood to create a “new water” supply. The degree to which many of the regional plans depend upon demand management to avoid showing a deficit between demand and supply is worth noting. Centrally planned demand management is less able to increase water supply than specific, locally managed projects such as the Lower Colorado River Authority’s off-channel reservoirs under construction.

Source: [TWDB](#)

These projections—estimated on a statewide basis—can mask water demand and water availability in different regions or localities. Estimates of actual and projected need must include actual water availability. If water is simply not available—as has happened to the irrigators in the Panhandle and along the lower Colorado River—then use will decline. And individual reservoirs need basin firm yield availability to actually deliver water for and from storage. On the basis of a water balance, it may appear Texas has enough water statewide. Yet, without the infrastructure to efficiently move water to where it is needed, it matters little whether one region is full of water (e.g., East Texas) while another (Dallas-Fort Worth [DFW]) is short of water.

Figure 2 illustrates how actual use has generally fallen below water plan projections since 2002 and how actual use trends are below drought-based projections. However, it also shows that peak use during times of more extreme weather more closely track projections since 2002. While these differences might be interpreted to mean that current drought-driven water policy is the best approach, they also highlight the need for market-based planning to ensure that Texas efficiently and effectively meets its future water needs.



Source: TWDB

Twenty Years of Water Legislation

Over the last 20 years, the Texas Legislature has enacted four major water bills. SB 1, the landmark legislation passed in 1997, focused on creating a process to ensure that Texas planned for the future and could develop a readily available, adequate supply of water to meet the future’s increasing demands under drought conditions. To this end, SB 1 created a bottom-up, regional water planning process administratively compiled by the TWDB in an SWP issued every five years. SB 1 also created the “junior” provision for interbasin transfers of water, which decreases the value of that right to the buyer in a new basin. Both serve as significant impediments to water transfers and water market creation. Indeed, a variety of provisions in SB 1, which were intended to facilitate voluntary water transfers in a competitive market, have been interpreted and applied in a way that obstructs water markets.

In 2001, the 77th Legislature passed SB 2, known for the expansion of local Groundwater Conservation Districts (GCDs) and their regulatory jurisdiction as first created in 1949. Texas now has 99 GCDs covering most of the state’s territory. There have been numerous conflicts between property owners and GCDs over the years, including one that culminated in a Texas Supreme Court decision in which the court held that a landowner has a real private property right in the groundwater in place below his land—a constitutionally

protected property right in legal scope equivalent to a landowner’s ownership of the subsurface oil and gas resources.

In 2007, the Legislature enacted SB 3, which formulated a highly multi-layered process to culminate in the TCEQ’s adoption of Environmental Flow Standards for new water rights and the development of management strategies to ensure those environmental flows. SB 3 implementation spawned legal challenges such as the federal litigation *Aransas Project v. Shaw*. In this case, The Aransas Project (TAP) sought injunctive relief that would have prohibited the TCEQ from amending existing, or granting new water rights in the San Antonio and Guadalupe River basins.

This prohibition would have amounted to federal control of two major Texas river basins unless an appellate court reversed the decision. Appropriately, the U.S. district judge’s 2013 decision was subsequently reversed on appeal. The Fifth Circuit Court of Appeals ruled:

“Because the deaths of the whooping cranes are too remote from TCEQ’s permitting withdrawal of water from the San Antonio and Guadalupe Rivers, the state defendants cannot be held liable for a take or for causing a take under the ESA. Even if the state defendants should be held liable, the injunction was an abuse of discretion. The district court’s judgment is REVERSED.”

SB 1

SB 1 created a water planning process that divides the state into 16 Regional Water Planning Groups (RWPGs) labeled Regions A to P. Each regional group consists of approximately 23 members who represent 12 diverse water users and other interests. Every 5 years, RWPGs reassess their region’s projections on existing water supply, water demand, and population. Each RWPG must highlight when the estimated existing water supply falls short of demand under drought-of-record conditions.

In 2013, the 83rd Legislature passed a fourth major bill devoted to increasing water supply. HB 4 established funding mechanisms for water supply strategies as identified in the regional and state water plans. The new funding program, known as the State Water Implementation Fund for Texas (SWIFT), provides financial incentives to support implementation. Of note, SWIFT is a loan program; grants are not allowed.

In 2005, another bill, HB 1763, also added substantial regulatory constraints on groundwater development by means of Desired Future Conditions (DFCs) and Managed Available Groundwater—now known as Modeled Available Groundwater (MAG). Of the many factors that now obstruct new water projects, these state and local regulatory requirements and processes remain major components.

Texas cannot supersede federal regulations such as those from the Endangered Species Act (ESA). Designation of species under federal law as endangered or threatened can hobble water development. In Texas, the proposed listing of the Texas hornshell freshwater mussel and 11 other freshwater mussel species could significantly affect the value of water and how that value is calculated in multiple river basins.

On the other hand, what the Texas Legislature can control is state regulation. Allocation of water resources is perhaps the only natural resource issue in which the states still remain the exclusive authority. If our state is to avoid future water shortages, the time is ripe for a fifth omnibus water bill with the policy goal of moving away from planning and toward competitive water markets.

Property Rights in Water Are Essential to Securing Adequate Water Supply and for the Establishment of Effective Water Markets

History has shown that the best instrument for optimizing allocation of a scarce resource is the exercise of private property rights in a competitive marketplace. Water development is no exception. Past legislatures had faith in water markets. In the first lines of the landmark SB 1, the Legislature stated that “voluntary redistribution” of existing water supplies will account for most of the water needed to meet future demand (SB 1, 2). Such “voluntary redistribution” envisions water markets in which the owners of a water right voluntarily sell all or a portion of their

right to a buyer for a specified term or in perpetuity. As history has shown, this is much easier said than accomplished.

An effective water market exists when transactions are not hindered by Texas law, though targeted and limited regulation can facilitate water markets. For example, regulation of upstream oil and gas production offers an example for water policy, particularly for groundwater. First and foremost, however, private property rights in water must be clearly defined, enforceable, and freely exchanged.

As previously stated, immediately following the enactment of SB 1, there were enthusiastic efforts to create water markets. These efforts never gained steam, but for a few exceptions. One key obstacle has been the uncertainty about the legal scope of a water right. This ambiguity, to a large extent, is still not resolved. In the city of Marshall, an application for a simple amendment to add an additional beneficial use to a fully adjudicated municipal water right languished pending regulatory approval for over six years. Ultimately, the city withdrew its application.

A second hurdle to water markets can be seen in some local GCDs’ refusal to issue drilling permits to groundwater owners. For example, in May 2013, the Lost Pines GCD denied a request from Forestar Real Estate Group for a permit to pump 45,000 acre-feet per year from the Simsboro aquifer. Instead of authorizing the amount requested, the GCD authorized withdrawal of only 12,000 acre-feet per year. This decision put at risk a \$1 million contract Forestar had with Hays County. Forestar filed

HB 4 Water Strategy Prioritization

HB 4 calls for regional water planning groups to prioritize strategies based on a set of criteria that includes “viability,” “feasibility,” and “sustainability” (HB 4, 16). The lack of a clear definition of these critical terms in relevant Texas law or statutes contributes, in part, to the reliance on strategies that may not see the light of day. This central planning requirement without clearly defined terms for critical prioritization also contributes to the difficulty in establishing an effective water market that can provide the proper valuation of water that would help determine realistic means of meeting future water needs.

a lawsuit to challenge the GCD's decision. In this instance, the lawsuit was ultimately settled. The initial action of the Lost Pines GCD stymied Forestar's project and set a chill on future consideration of such projects across the state.

Overall, water markets in Texas face several complications that hinder the development of voluntary exchange and planning:

- **Uncertainty over exercise of water rights:** Surface water in Texas, as in most of the western states, is a public good, but the water is appropriated to water users through a usufructuary property right. A surface water right in Texas is dedicated to one or more of the beneficial uses listed in the Texas Water Code (TWC). The right typically specifies volume, point of diversion, rate of diversion, and time of diversion. Unless limited to a specific term, surface water rights are held in perpetuity. Delays in approval of change-of-use water rights amendments hobble water markets.
- **Water often cannot be priced efficiently because of the lack of markets:** Similar to other markets in today's heavily regulated economy, regulatory impediments in the water market hinder both buyers and sellers from gaining a better understanding and expectation of prices for water transfers. The lack of pricing information and other regulatory impediments may stop agricultural users from shifting to lower water-use crops or from investing in more efficient irrigation practices. This also interferes with potentially surplus water being made available for a market transaction.
- **Reliability of supply:** The water that a willing buyer wants to market is often not available on a firm basis. The "junior rights" provision in controlling interbasin transfers is a prime example of this restriction. Lack of compliance with established water sharing agreements by third parties, such as river compacts and treaties, certainly has been a similar impediment. Also, the reliability of existing water is weakened by inconsistent responses from regulatory agents.
- **Environmental flows:** Increased off-channel diversion and consumption (including re-use), changes of use between basins, and reduced return flows can all have an effect on our streams, lakes, bays, and estuaries. Regulations that attempt to manage these issues

often hinder the determination of the market value of water. Mitigation of impacts are often based on flimsy science. Potential environmental impacts are real and should be assessed with robust science rather than overblown, as they are sometimes perceived.

- **Area of origin impact:** Moving water from where water is available or stored to where water is needed likely causes an economic impact not only to the receiving basin, but to the area of origin as well. Impas-

Without a mechanism for a meaningful valuation of water, litigation will likely continue.

sioned debate typically surrounds the areas of origin concerned about potentially decreased local economic output, diminished tax base, and effects on environmental flows. Without adequate markets, these issues can never truly be addressed.

- **Interbasin transfers:** The review process for interbasin transfers is elaborate. Current law and rule have not resolved the impasse between the area of origin and the receiving basin. The fate of the proposed Marvin Nichols reservoir in northeast Texas offers a clear example of these barriers. Opposition to this project raised by interests in the basin of origin has indefinitely delayed what was a key project in TWDB's Regional Water Planning Groups C (DFW area) & D (Northeast Texas). This dispute over the proposed Marvin Nichols reservoir has been a costly, litigious battle. The dispute centers on concerns about the economic impacts to the area of origin, the proper valuation of these impacts, the need for water in the DFW region and associated economic benefits in the receiving basin. Without a mechanism for a meaningful valuation of water, litigation will likely continue. Under existing law and rule, it is doubtful whether the economic impacts and feasibility of interbasin transfers can be determined in a manner agreeable to both parties. The 2007 R.W. Beck report for the TWDB entitled *Socio-economic Analysis of Selected Interbasin Transfers in Texas* makes a point that while the junior rights provision may not dissuade regional planning groups from **considering** interbasin transfer as a viable strategy,

“**implementation**” of these non-exempt transfers is quite another matter ([R.W. Beck, Inc., Es-2](#)). The dispute over Marvin Nichols is an excellent example of the difference between considering and actually implementing a water management strategy.

- **Political, community, and other social barriers:** A discussion of moving water typically evokes visceral responses—particularly within the area of origin, as discussed above. A water market based on comprehensive valuation of water for both the basin of origin and receiving basin, as discussed above, can help address competing concerns.

Throughout Texas history, groundwater and surface water have been allocated through water rights under two different legal regimes. In the last few decades, Texas has enacted laws to restrict the scope and exercise of those rights. Reform of those laws and the rules promulgated under those laws are essential to needed water development. Overcoming these regulatory obstacles is dependent on the creation of a fully functioning water market in Texas. Key provisions in the water code need amendment to reflect water right owners’ legal authority to use and exchange water, with minimal interference from the government. The regulatory nature of the state’s current water system is now significantly at odds with this priority. To move forward, water markets in Texas should be based upon the following:

- **Well-defined, understood, and legally recognized property rights in water:** Well-defined, understood, and recognized property rights must include the freedom to exercise those rights. The legal scope of Texas water rights has become unclear over the last several decades. Recent legislation and judicial rulings have clarified property rights in groundwater, but surface water rights remain subject to significant restrictions that prevent the development of true water markets. The ability to freely use and exchange water is essential to the development of a well-functioning water market in Texas. This includes the ability to separate water from land and an equal ability to change the type or place of use for that allocation—without affecting other, already-issued rights.

- **Informed, voluntary buyers and sellers:** Willing buyers must have the ability to acquire water rights. Willing sellers must have the ability to exercise their property right to sell a previously acquired and perfected water right. Under today’s circumstances, it is almost impossible for a willing seller and potential buyers to know what portions of the water rights in question are available for transfer. Thus, any proposed transaction is met with uncertainty and resistance. Regulatory actions that reallocate water impose unnecessary restrictions or timeframes on water transfers, devalue water, and hinder the development of effective water markets.
- **The valuation of water through market prices:** The valuation of a particular water right by a seller, buyer, and other interested parties depends upon key information. How much water is available for use? How can it be used? How do others value this right? How can the value of the right be improved? Ultimately, most of this information is transmitted through prices. Current restrictions in the Texas water market hinder the development of market prices through free and voluntary exchange, locating the determination of the value of water in a ponderous administrative and regulatory process within the state government and local water districts. Removing these restrictions will facilitate the free exchange of water and information about water, enabling the valuation of water to take place where it should—in the market.

Groundwater

In Texas, ownership of groundwater is a real private property right held by landowners. This right has been reaffirmed in recent years by both the Texas Legislature and

Current restrictions in the Texas water market hinder free and voluntary exchange.

the Texas Supreme Court. The 82nd Texas Legislature passed SB 332, which clarified “that a landowner owns the groundwater below the surface of the landowner’s land as real property” ([SB 332, 1](#)). Not long after the passage of that bill, the Texas Supreme Court, in *Edwards Aquifer Authority v. Day*, further solidified the landowner’s property right to groundwater in place. The Court held that “In our

state the landowner is regarded as having absolute title in severalty to the oil and gas in place beneath his land . . . we now hold that this correctly states the common law regarding the ownership of groundwater in place” ([Edwards Aquifer Authority v. Day](#)). In other words, the Court ruled that groundwater rights, like property rights in subsurface minerals, are constitutionally protected from regulatory “takings” of property without just compensation.

So, with this relatively clear directive from the Court and the Legislature, why are there so many conflicts? While the new statutory provisions and the court rulings are legally clear, their application is controversial and inconsistent. State and local regulators have yet to consistently apply the law as amended by the Legislature and clarified by the Court. In fact, the response to these changes from state and local regulators has typically served to complicate—rather than facilitate—efficient water market transfers.

Groundwater Conservation Districts

Groundwater has long been anticipated as an appropriate arena for voluntary transfers through water markets. Like other real property rights, groundwater rights are subject to reasonable regulation.

State and local regulators typically complicate rather than facilitate efficient water market transfers.

In keeping with the original intent of SB 2 and other legislation that authorized the creation of GCDs, the rules adopted by individual districts vary as do their effects on groundwater development. Some GCDs limit or even deny landowners’ permits to pump groundwater. Regulators attempt to justify their decisions on local concern about depletion of groundwater resources, potential impacts to nearby wells, and diverse interpretations of the relatively new regulatory standards known as DFCs.

Most groundwater development has been stymied by GCD regulations (with the notable exception of temporary transfers of groundwater in the San Antonio area). Lack of clarity and consistency precludes emergence of fully functioning water markets.

A GCD has general authority over rulemaking and permitting, “including rules limiting groundwater production based on tract size or the spacing of wells, to provide for conserving, preserving, protecting, and recharging of the groundwater or of a groundwater reservoir or its subdivisions in order to control subsidence, prevent degradation of water quality, or prevent waste of groundwater” ([TWC 36.101](#)). The statute’s expansive definition of “waste” has driven the broad authority now asserted by GCDs ([Caroom and Maxwell](#)).

SB 2 further expanded the scope of GCD powers to include preservation of historic use and creation of Groundwater Management Areas (GMAs). A GMA encompasses individual groundwater districts that share the same aquifer, either in whole or in part. When various GCDs within the same GMA and drawing from the same aquifer have different permitting policies and practices, this uncertainty discourages investment in needed groundwater projects. The local districts existing within a given GMA are now required to engage in a joint planning process.

Passed in 2005, HB 1763 created DFCs of aquifers and MAG. It is important to note that HB 1763 is the first Texas law that extends state regulation over groundwater.

DFCs are defined by Texas law as the “desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one or more specified future times,” as defined by the joint planning process between the GMA and GCDs ([TWDB 2016](#)). MAG is “the amount of water that the TWDB executive administrator determines may be produced on an average annual basis to achieve a desired future condition” ([TWDB 2017](#)).

DFCs and MAGs are used to quantify the amount of groundwater to be permitted, consistent with maintaining the DFC. These provisions are directly, but with significant limits, overseen by the TWDB, a planning, financing, and data collecting agency without full-blown regulatory authority. There is widespread disagreement over the extent to which DFCs and MAGs can limit or deny pumping permits without violating the constitutional protection of private property rights in groundwater.

In 2010, the Lost Pines GCD issued a moratorium on new pumping permits, claiming that it could not issue new permits until DFCs were reviewed and MAG numbers were issued by the TWDB. Like Lost Pines, many local districts have used their interpretation of DFCs and MAGs to deny groundwater rights. MAGs, in particular, have been used to impose caps on groundwater development, constraining or denying landowners' rights to use the groundwater below their land.

The 84th Legislature passed HB 200 to streamline a landowner's administrative and judicial challenge to DFCs, MAGs, and local GCDs' use of these measures to deny a landowner's pumping permit. The legislation is a worthy first step but does not eliminate the state's and local GCDs' legal advantage.

Additionally, GCDs are not clearly required to comply with the Texas Administrative Procedures Act. This constrains landowners' assertion of their constitutional rights. An example can be seen in local districts' authority to levy civil penalties and recover attorney's fees from landowners who lose in court, a privilege granted to them under current law.

The Legislature has repeatedly recognized GCDs as the state's "preferred method of groundwater management" in order to maintain local control and a bottom-up policy respecting local differences and landowners' choice, in contrast to centralized state authority ([TWC 36.0015](#)). Yet the focus of groundwater management in Texas should be on property owners, not on GCDs. The history of some GCDs proves that they do more to hinder the development of a functional water market than they do to conserve, preserve, and protect groundwater supplies.

Opportunities for Groundwater Reform— Recommendations

The Texas Legislature and Supreme Court recognize groundwater as a real private property right held by landowners. Yet Texas' management of this resource is an inconsistent hodgepodge of regulations from one groundwater district to another that make it difficult to establish a water market. Until management of groundwater reflects court rulings that groundwater is a real private property right held by landowners, meaningful groundwater marketing is improbable at best.

- **Recognizing property rights:** HB 3028 in the 85th Legislature would require that all GCDs' rules, permits, management plans, and DFCs recognize landowners' ownership of the groundwater in place

Until management of groundwater reflects court rulings that groundwater is a real private property right held by landowners, meaningful groundwater marketing is improbable at best.

and uphold the exercise of the owner's real private property right. Compelling GCD board members to recognize landowners' groundwater rights should tilt local districts toward supporting groundwater development in the private sector. In addition, the authority of local GCDs should be reformed to hold districts to more rigorous science and hold them accountable under the Texas Administrative Procedures Act.

- **Permitting for life terms:** When developing a water supply project, the project is considered to have a "life term." As such, any project must have a water supply or water permits that provide water for the life of the project. This is critical not only for the establishment of water markets, but to also attract various sources of capital, including private investments, to assist in implementing needed water strategies. It is unlikely that any entity will expend or be able to secure the financial resources necessary to develop a water supply project without permits that secure water for the project's life. Thus, to aid in the development of identified water strategies, it is recommended that groundwater permits be issued for periods that at least match the project's life.
- **Removing regulatory obstacles:** Ultimately, regulatory obstacles to the private development of groundwater should be removed to facilitate water marketing. The Texas Legislature should follow the lead of the Texas Supreme Court in upholding landowner ownership of groundwater in place on the basis of oil and gas law. The development and withdrawal

of oil and natural gas resources are generally governed by private contract, not by local oil and gas conservation districts. The Texas Legislature should examine how to move from regulatory-focused to a contract-focused means of conserving, preserving, and protecting groundwater supplies. One way of doing this is enacting legislation that articulates inherent correlative rights in groundwater acknowledged by the *Day* decision.

Surface Water

In Texas, surface water and groundwater are governed by distinct legal systems. Under Texas law, surface water is owned by the state, but the state issues surface water rights (typically held in perpetuity) under the prior appropriation system, long utilized in all western states. Texas surface water rights are fungible and can be transferred with minimal TCEQ review—if their terms are not altered when sold.

The prior appropriation system posits that “first in time is first in right.” This means that each surface water right carries a priority date. In times of shortage, the most senior rights are authorized first to divert water. This system was reaffirmed by a February 2016 Texas Supreme Court decision in *Texas Farm Bureau v. TCEQ* case, in which the Court denied TCEQ’s petition for review. This denial let stand the Appeals Court decision that invalidated the TCEQ’s drought curtailment rules under which TCEQ had curtailed senior agricultural and industrial water rights in order to allow junior municipal rights to divert. The court clarified that senior rights maintain their priority even in times of water shortages.

Under this ruling, TCEQ no longer has the option to allow junior water right holders to divert water before the senior rights when their priority date dictates they should be curtailed. This decision assists in determining the value of water. TCEQ’s enforcement of the priority date of senior water rights preserves the value of that right. This type of enforcement is necessary to advance water markets.

Permit Amendments

Typically issued in perpetuity, a surface water right under Texas law is a right of use. Surface water right holders in Texas can sell their water rights with minimal state review as long as the volume, beneficial use, and

location do not change. However, changes in the place of use, purpose of use, or place of diversion may require a water right amendment issued by the TCEQ through a review potentially involving a cumbersome, lengthy, contested case. Under the TWC, TCEQ may approve a water right amendment if the change would not impose greater impact on other water right holders or the environment than the original right would.

Given the Supreme Court’s decision in *Texas Farm Bureau*, it is extremely important to streamline this process so that the market can rapidly respond to the shifting needs of different communities and users in times of water scarcity.

A socioeconomic analysis commissioned by the TWDB found that a selected group of interbasin transfers produced substantial economic benefits for the basin of origin.

Interbasin Transfers and the Junior Rights Provision

Interbasin transfers of surface water have long been envisioned as a key water supply strategy. The rationale is straightforward. When one region of the state faces a water shortage, the water-short region acquires water from a region with excess water resources.

Thus far, the prospect of interbasin transfers under current law has sparked major controversy within the basins of origin. Some residents in the basin of origin worry that the interbasin transfer may deprive them of needed water and economic opportunity in the future. Others in both basins worry about potential environmental impacts of the transfer regarding stream flows, water quality, and potential influx of non-native aquatic organisms. However, when interbasin transfers are allowed to fully function within a free market based on voluntary exchange, the rights holders in the area of origin can arrive at an agreement of mutual value with the potential buyers in the receiving basin. Owners in the area of origin need not agree to a price until they feel adequately compensated for their water. A socioeconomic analysis commissioned by the TWDB found that a selected group of interbasin transfers produced substantial economic benefits for the basin of origin that ranged from \$68 billion to \$1.3 trillion ([R.W. Beck, Inc., 26](#)).

Rather than rely on the pricing mechanism to address concerns with interbasin transfers, Texas public policy has often relied on various permitting restrictions. In 1965, the Texas Supreme Court held in *San Antonio v. Texas Water Commission* that the TCEQ could not approve an interbasin transfer that would lead “to the prejudice of any person or property situated within the watershed from which such water is proposed to be taken or diverted,” or where the benefits from the diversion “were outweighed by detriments to the originating basin” ([San Antonio v. Texas Water Commission](#)).

Similarly, the TWC stipulates a cumbersome permitting process for interbasin transfers of surface water. The TCEQ must review comments on the application from each county judge of a county located in whole or in part in the basin of origin. Transfers over 3,000 acre-feet per year require an evaluation of a number of criteria in addition to impacts to existing rights, including (1) impacts on the environment; (2) water quality, including the detriments to the basin of origin and benefits to the receiving basin; (3) proposed compensation and mitigation; (4) availability of practicable alternative supplies; and (5) projected economic impact to the basin of origin and receiving basin. Also, the transfer must not be detrimental to public welfare. Transfer authorizations can require mitigation or compensation for basins of origin. The TCEQ can mitigate impacts to environmental values by placing flow restrictions on interbasin surface water transfers.

The TCEQ can only approve an application for an interbasin transfer of surface water if the detriments to the basin of origin are fewer than the benefits to the receiving basin and the applicant for the interbasin transfer has prepared a drought contingency plan and implemented a water conservation plan.

Perhaps the most significant restriction the Legislature has placed on interbasin transfers is the junior rights provision. Nonexempt surface water interbasin transfers carry a junior priority date to all existing water rights within the basin of origin. The TWC provides that “any proposed transfer of all or a portion of a water right under this section is junior in priority to water rights granted before the time application for transfer is accepted for filing” ([TWC 11.085](#)). In other words, the provision terminates the seniority of the water right in the basin of origin when it is sold to a buyer in another basin. The seniority of a water right largely determines the economic value of the right. Without even a relatively senior priority date, the buyer of the water right in the receiving basin has no

certainty whether the water right can ever be exercised. The junior rights provision reduces or even eliminates the market value of almost any water right that might be purchased for use in another basin and thus reduces the possibility of interbasin transfers from taking place.

Since the junior rights provision strips water rights of their seniority, and therefore their value, persisting gaps between supply and demand for water exist throughout the state and underscore the need for legislation to facilitate interbasin transfers while protecting basins of origin. Legislative interest in modifying or repealing the junior rights provision has increased over the last two sessions. HB 1153, introduced during the 84th Legislature, called for the provision’s repeal. It was introduced and referred to the House Committee on Natural Resources.

The Western Governors’ Association (WGA) report also includes, in Appendix C, a comprehensive review of how states have dealt with the concerns of the area of origin ([WGA & WSWC, 91](#)). Of note, Texas is the only state to rely on a junior rights provision for interbasin transfers. As previously discussed in this document, the junior rights provision, while well intended, does not promote effective valuation of water, proper determination of impacts to the basin of origin, or market-based transactions.

Here are a few examples of how other states attempt to quantify and address area of origin impacts:

- **Idaho:** Transfers must “not adversely affect the local economy of the watershed or local area within which the source of water for the proposed use originates.” The Idaho Department of Water Resources will not approve “a change in the nature of use from agricultural use where such change would significantly affect the agricultural base of the local area” ([Idaho Code 42-222](#)).
- **Kansas:** Transfer cannot be approved if it would reduce the amount of water needed to meet the present or reasonably foreseeable future needs of present or future users in the area of origin. Conservation plans are also needed, among other requirements. There are exceptions to this requirement, including a finding that the benefits of the transfer to the state

support allowing the transfer. Kansas law sets forth a number of specific considerations for this determination, including, but not limited to, considerations of (1) the economic, environmental, public health and welfare, and other impacts of approving or denying the transfer; and (2) whether the applicant has taken all appropriate steps to preserve water quality and remediate any contamination of water currently available for use by the applicant.

- **Nebraska:** The Nebraska Department of Natural Resources may request applicants to provide an analysis of the economic, social, or environmental impacts of the proposed transfer. The new use must be within the same basin as the original place of use, or be within a basin that is a tributary to the original basin. For permanent transfers (over 30 years), the original use must be in the same “preference category” of the new use, or both uses must be uses for which new preference has been established. Preference categories include domestic over agriculture over municipal over industrial.
- **Oklahoma:** Oklahoma law states that “only excess or surplus water should be utilized outside of the areas of origin and citizens within the areas of origin have a prior right to water originating therein to the extent that it may be required for beneficial use therein” ([Oklahoma Statutes 82-1086.1](#)). In processing applications to transport water for use outside of a stream system, the Oklahoma Water Resources Board (OWRB) will first consider pending applications to use water within the system. OWRB will also review the needs with an area of origin every five years “to determine whether the water supply is adequate for municipal, industrial, domestic, and other beneficial uses” ([Oklahoma Statutes 82-105.12](#)).

The Rio Grande Water Market and TCEQ Watermaster Program

The Rio Grande below Amistad Reservoir is a unique system completely different from the rest of Texas. Under provisions of the Texas Water Code applicable to the middle and lower Rio Grande, temporary water transfers have created a reasonably effective water market. All water rights are allocated based on U.S. storage in Falcon and Amistad Reservoirs and have a priority based on the type of use rather than a priority date unlike the prior

appropriation system governing the rest of Texas surface water. Below Amistad Reservoir, the highest priority of use is domestic, municipal, and industrial uses (DMI); the second priority is the system or operating reserve which bears all conveyance and evaporative losses of the system; and the last priority is agriculture. The basin is a “closed system.” Water cannot be “imported” into the system from other sources due to an existing treaty between the United States and Mexico.

Through the TCEQ’s watermaster program, known offers to sell water rights, as required by certain water code provisions, are posted on the watermaster’s webpage. Known availability of water to sell for a specific period, known as a “wet water transaction,” is similarly available by calling the watermaster’s office. Water supply data is well documented and communicated to all users. Agricultural water can readily be severed from its intended place of use (land) and sold to a willing buyer within the system. All conversions from lower end uses (agricultural) which are not guaranteed by the system must be effectuated via a prescribed conversion reduction in allocated amount of either 40 percent or 50 percent. These conversion reductions also address system over-allocation and ensure system balance. System balance also assists in ecosystem health via ability to maintain water in storage and at least minimal flow in all segments at and below Amistad Reservoir. Except for water transfers from the upper Rio Grande to the middle and lower system, all other transactions and change of ownership transfers do not require public notice.

System efficiency and water marketability are also aided by the watermaster’s authority to utilize flows in the river to meet demands for water without necessarily requiring a corresponding release from the reservoir. This example of active water management, supported by timely data, enlarges the potential use of water held in storage that can be made available for future use or to support a market transaction.

This water market works efficiently because the owner of a water right in the middle and lower Rio Grande can, for a defined term, sell a portion or all of his water right to another person who will put it to beneficial use in the main stem of the Rio Grande. These transactions do not require public notice and can move water up and downstream without any reliability impact to other users. Transactions that change the type of use from a lower end use (agricultural) to a higher end use result in a system benefit due to the conversion of the type of water use permitted. This type of transfer

of use from agriculture to domestic or municipal use results in a guaranteed right and increases its value. These types of market transactions establish well-recognized “valuations” of water to be sold, which assist willing sellers and buyers in arriving at an agreeable transaction end point.

Wet water transactions do not require public notice and are processed by the watermaster most often within the same day. Demand for water drives valuation within the year but varies from year to year based on elements such as weather, consumption, crop mix determinations, and lastly treaty compliance by Mexico. The average cost of wet water sale is readily available to all users.

As seen from the Rio Grande and also observed from water markets throughout the west, reservoirs and reservoir systems typically provide the most effective mechanism to market surface water. This example could guide our view of how Aquifer Storage and Recovery projects could also incentivize market transactions.

Voluntary, market-based transactions can greatly assist in both the proper valuation of water and the establishment of an effective water market.

Environmental Flows

In 2007, the Legislature adopted SB 3, which enacted a process to establish regulatory standards for instream and estuarine freshwater inflows. These new limits apply only to new water rights issued after the time of the bill’s passage. The process established is remarkably complicated—a reflection of the controversy surrounding the bill. The process consists of the following five layers to formulate flow recommendations based on a consensus of scientists and stakeholders: 1) Basin and Bay stakeholder groups; 2) Basin and Bay Expert Science Teams for each river basin; 3) an Environmental Flow Advisory Group appointed by the governor; 4) a statewide Science Advisory Group; and lastly, 5) the TCEQ’s adoption of formal environmental flow standards in rule.

TCEQ has now adopted Environmental Flow Standards for all the major river basins required under SB 3. Because SB 3 required environmental flow standards be applied only for new water rights and most of Texas’ surface water already is

allocated in existing water rights, little surface water remains to create substantial set-asides for environmental flows.

While SB 3’s mechanism to address environmental flow needs may provide some stability for establishing water markets, how the TCEQ treats amendments to existing water rights will significantly affect the valuation of all water rights. The Texas Administrative Code stipulates that only “a permit for a new appropriation of water or to an amendment to an existing water right that increases the amount of water authorized to be stored, taken, or diverted” is subject to environmental flow standards under SB 3 ([TAC 298.10](#)). However, in the same chapter, it states that TCEQ authority to “impose special conditions on water right permits” and “to place special conditions on interbasin transfers; on amendments, such as an amendment to move a diversion point upstream” is not amended or restricted ([TAC 298.10](#)). Voluntary, market-based transactions for dedication of water toward meeting environmental flows can greatly assist in both the proper valuation of water and the establishment of an effective water market.

Opportunities in Surface Water Reform— Recommendations

Surface water accounts for 3.8 million acre-feet of water needed by water users. This is 45 percent of the total recommended water supply strategy in 2070, the most significant individual source strategies outlined in the 2017 State Water Plan ([TWDB 2017](#)). Since surface water is replenished by annual rainfall, the state’s planning process considers surface water a more sustainable resource than groundwater.

Since most of Texas’ surface water is already appropriated through water rights held in perpetuity, market-driven water transfers could offer an effective tool for optimal allocation of scarce water resources ([WGA & WSWC](#)). Many of the water rights are currently underutilized. Thus, the opportunity exists for voluntary market transfers that could provide both temporary and permanent supplies of water to meet Texas’ needs. This can only be accomplished through a permitting process that leads to expedited and consistent results.

To most effectively use our available surface water supplies, we have to find ways to allow water rights’ holders

to effectively and efficiently transfer their rights as needed. State regulatory issues and uncertainty surrounding environmental flows, water right amendments, indirect re-use of water, and interbasin transfers now obstruct and have forestalled surface water projects and development of functional water markets in Texas.

- **Loss of Seniority and the Junior Rights Provision:** To facilitate increasingly needed water development, the Legislature should amend the junior rights provision to eliminate loss of the seniority of the water right transferred, to limit its scope for *de minimus*, temporary transfers, and to more clearly and realistically protect the interests of the basin of origin.
- **Property Rights:** In Texas, surface water is allocated through fungible private rights of beneficial use that can be purchased and sold. The Legislature should amend the Texas Water Code to clarify the property interest of these constitutionally protected rights.
- **A Role for Watermasters:** Under the current government-operated system, TCEQ should be better able to actively manage and enforce ownership of the state's water resources. Active water management is a means of upholding and protecting private water rights through the ability to verify water diversions in real time and prevent unauthorized diversions. Its enforcement would enable more timely and accurate information regarding the current use of water and the availability of water for marketing. Such information would also be helpful in establishing the market value of water. This kind of management could be accomplished through an expansion of the TCEQ's watermaster program. The daily management of river flows and diversions by a watermaster, interaction with water right holders, enforcement authority, and readily available information all contribute to the preservation of a well-defined and predictable regulatory process. It is this certainty that protects the integrity of the water rights under the purview of a watermaster system. Perhaps this is why, while a watermaster has specific enforcement authority, enforcement actions are rarely relied upon to protect the state's water resources. Active water management would enable the TCEQ to be proactive in managing the state's surface water supply, as opposed to the current reactive approach.

- **Interbasin Transfers:** Texas would be well served to once again try to develop a process whereby the receiving basin, working in cooperation with the area of origin, could reach a mutually agreed upon valuation of all economic impacts and provide a portion of the receiving basin's economic gain to the basin of origin for development and mitigation purposes. By using a free market system based on voluntary exchange, the original owner of a water right could receive compensation for water much greater than he would have received otherwise, while the lessee receives water for less than he would have otherwise paid; for interbasin transfers, both the receiving basin and the area of origin could benefit. The fact remains: Texas cannot solve its future water demands without being able to move water from where it is to where it is needed. The vastness of Texas and its diverse river basins require site-specific and basin-specific considerations. Regulatory actions that call for a singular, statewide metric only serve to hinder creation of water markets.
- **Environmental Flows:** Because TCEQ authority over amendments to water rights issued prior to 2007 may be interpreted as new water rights (and therefore subject to SB 3 environmental flow standards), the market value of these water rights would be difficult to calculate. Owners of water rights acquired prior to passage of SB 3 should be able to *voluntarily* dedicate, via a market-based transaction, a portion of their existing water right for environmental flows while maintaining its priority, but under existing law may instead be forced to. A

Edwards Aquifer Authority Comparison

Aquifers can also support effective water markets. The Edwards Aquifer is a system of private rights that serves as a key example and illustrates what parameters are necessary to facilitate water markets. Those parameters include:

- A definable and controllable water supply.
- Defined water rights and ownership within the aquifer.
- A defined and understood set of administrative procedures for aquifer administration.
- A database of sellers and buyers.

The Rio Grande water market works because it relies upon the same parameters.

further concern is the disjunction between regional water planning for an adequate water supply and TCEQ's regulatory standards for environmental flows. Competing scientific approaches and policy objectives between Basin and Bay Expert Science Teams and Regional Water Planning Groups can lead to environmental flow volumes that exceed those anticipated in State Water Plans and existing law. For example, in the 2012 State Water Plan, the DFW region relied on a 600,000 acre-foot transfer of water in Toledo Bend Reservoir, which lies on the Sabine River. However, in the report by the Sabine Basin and Bay Science Team, recommendations for environmental flow requirements would decrease water available for the transfer, undercutting the supply source for the DFW region ([Peacock and Druart, 124](#)). The SB 3 process for environmental flow protection now undermines that of SB 1 to supply water for meeting human demand. Environmental needs and human demand for water can both be met, and should be addressed through an integrated, single process.

Environmental needs and human demand for water can both be met, and should be addressed through an integrated, single process.

- **Real-time Models:** The Legislature has supported the development of the Water Availability Models (WAMs) to identify water available for appropriation. Updated WAMs are critical in future permitting decisions and could clarify permit terms commensurate with a project's "life term." However, these models are monthly analyses and cannot provide real-time assessments of current conditions. To develop a real water market, particularly as it relates to surface water, it is essential that our water administrators (TCEQ) have the tools to evaluate real-time water availability. Such tools could also be used to evaluate real-time "what if" scenarios that can assist in more efficient basin operations, protection of dedicated flows and identify project water savings. Because issuance of new water rights will require protection of environmental flows, the need for real-time measure of water availability is essential. TCEQ should acquire the appropriate real-time models and the expertise to use them.

- **Streamlining the Permitting Process:** Water right amendments for changes that have no impacts on existing water rights or the environment should be clarified, simplified, and incentivized without the burden of extended administrative hearings. Requirements for "bed and banks" authorization for indirect re-use of water also needs simplification ([TWC 11.042](#) and [TWC 11.046](#)).

Conclusion

As a matter of basic water policy, provision of water to meet basic human needs should occur through voluntary exchange within fully functioning markets operating under the protections for both groundwater and surface water rights recently upheld by the Texas Supreme Court. The TCEQ and groundwater conservation districts should incorporate these protections into their rules, regulations, and practices. For the TCEQ, this would include enforcing the "first in time, first in right" principle for existing municipal, industrial, and other water users—who have historically avoided curtailment during drought—thus facilitating acquisition of more senior rights to avoid curtailment in a drought. For groundwater districts, this would include incorporating the inherent correlative rights in groundwater acknowledged by the Supreme Court in its *Day* decision.

Texas' water laws should be reformed to remove current legal barriers obstructing the development of a private market for ground and surface water in Texas. Texas law should not impede private investment in water supply projects, hamper voluntary transfers of water, block inter-basin transfers, or bureaucratize approval of water right amendments. Instead, Texas water law should be updated to embrace free market transactions that have been incorporated into other Texas statutes governing markets such as electricity, telecommunications, insurance, and others.

The Texas economy has flourished under competitive free markets and lean, targeted regulation. Water policy should not be an exception to the Texas Model. Instead, water policy should reflect Texas' fundamental value that the ownership and exchange of private property is the basis for effective management of any resource. The private ownership and voluntary exchange of water rights within a free market offers the most effective path to meet the water needs of the free people of Texas and to conserve our magnificent natural resources. ★

References

- [Aransas Project v. Shaw](#), 756 F.3d 801, 824 (5th Cir. 2014).
- Caroom, Douglas G., and Susan M. Maxwell. 2013. [Texas Water Law Overview](#). Texas Water Law Institute.
- [Edwards Aquifer Authority v. Day](#), 369 S.W.3d 814 (Tex.2012).
- [HB 4](#). 2013. Enrolled. 83rd Texas Legislature (R).
- Idaho Code. [Section 42-222](#).
- Texas Board of Water Engineers. 1961. [A Plan For Meeting the 1980 Water Requirements of Texas](#). Texas Water Development Board.
- NMFS (National Marine Fisheries Service). 2016. [Gulf of Mexico](#). NOAA Office of Science and Technology. Accessed June 1.
- Oklahoma Statutes. [Section 82-1086.1](#).
- Oklahoma Statutes. [Section 82-105.12](#).
- Peacock, Bill and Nancy Druart, eds. 2014. [Legislator's Guide to the Issues: Surface Water Rights](#). Texas Public Policy Foundation.
- Porter, Charles, and Edmond McCarthy, Jr. 2016. "[Methods and Challenges in the Credible Valuation of Water Rights in Texas](#)." University of Texas School of Law.
- R.W. Beck, Inc. 2007. [Socioeconomic Analysis of Selected Interbasin Transfers in Texas](#). Texas Water Development Board.
- [San Antonio v. Texas Water Commission](#), 392 S.W.2d 200 (Tex. Civ. App. 1965)
- [SB 1](#). 1997. Enrolled. 75th Texas Legislature (R).
- [SB 332](#). 2011. Introduced. 82nd Texas Legislature (R).
- TAC (Texas Administrative Code). [Rule 298.10](#).
- TWC (Texas Water Code). [Section 11.042](#).
- TWC. [Section 11.046](#).
- TWC. [Section 11.085](#).
- TWC. [Section 16.051](#).
- TWC. [Section 36.0015](#).
- TWC. [Section 36.101](#).
- TWDB (Texas Water Development Board). 2015. "[River Basins & Reservoirs](#)." Texas Water Development Board. Accessed November 12, 2016.
- TWDB. 2016. "[Desired Future Conditions](#)." Texas Water Development Board. Accessed May 4, 2016.
- TWDB. 2017. [Water for Texas 2017 State Water Plan](#). Texas Water Development Board.
- TWDB. 2017b. "[State Water Planning](#)." Texas Water Development Board. Accessed November 10, 2016.
- WGA (Western Governors' Association) and WSWC (Western States Water Council). 2012. [Water Transfers in the West](#). Western Governors' Association and Western States Water Council.

Acronym Key

DFC..... Desired Future Condition

ESA..... Endangered Species Act

GCD..... Groundwater Conservation District

GMA..... Groundwater Management Area

MAG..... Modeled Available Groundwater

SWIFT..... State Water Implementation Fund

SWP..... State Water Plan

TCEQ..... Texas Commission on Environmental Quality

TWC..... Texas Water Code

TWDB..... Texas Water Development Board

WAM..... Water Availability Models

WGA..... Western Governors’ Association

About the Authors



Kathleen Hartnett White

The Honorable Kathleen Hartnett White is a Distinguished Senior Fellow-in-Residence and Director of TPPF's Armstrong Center for Energy & the Environment.

White has served as Chairman and Commissioner of the Texas Commission on Environmental Quality (TCEQ), appointed by Governor Rick Perry. TCEQ is the second largest environmental regulatory agency in the world after the Environmental Protection Agency, with regulatory jurisdiction over air quality, water quality, water rights & utilities, storage, and disposal of waste.

Prior to joining the TCEQ, White was appointed by then Governor George Bush to the Texas Water Development Board. She has served on the Texas Economic Development Commission and the Environmental Flows Study Commission. She recently completed her term as an officer and director of the Lower Colorado River Authority. White now sits on the editorial board of the *Journal of Regulatory Science*, the Texas Emission Reduction Advisory Board, and the Texas Water Foundation.

White received her Bachelor's *cum laude* and Master's degrees from Stanford University, was awarded a Danforth National Fellowship for doctoral work at Princeton University, and studied law under a Lineberry Foundation Fellowship at Texas Tech University.



Carlos Rubinstein

Rubinstein is the Principal member of RSAH2O, LLC – an environmental consulting firm with strong emphasis on water issues.

Rubinstein served as chairman of the Texas Water Development Board (TWDB) from 2013–2015. He also served as the Texas representative to the Western States Water Council, and the Border Governors' Conference Sustainable Development worktable. Rubinstein served as a commissioner of the Texas Commission on Environmental Quality (TCEQ) from 2009–2013.

Rubinstein is a former member of the Texas Environmental Flows Advisory Group, the Governmental Advisory Committee, which advises the EPA Administrator on environmental concerns regarding NAFTA, the North American Agreement on Environmental Cooperation; and the Commission for Environmental Cooperation and of the Good Neighbor Environmental Board, an independent federal advisory committee that assists the president and Congress on environmental infrastructure needs along the U.S. border with Mexico. He has also served as deputy executive director of TCEQ and as Rio Grande Watermaster. He is a former city manager for the City of Brownsville.

Rubinstein received a bachelor's degree in biology from Pan American University.

**Herman R. Settemeyer**

Settemeyer is a Partner member of RSAH2O, LLC, an environmental consulting firm with strong emphasis on water issues.

Settemeyer has over 40 years experience at the Texas Commission on Environmental Quality in Texas water policy and procedures; interstate river compact administration and Supreme Court litigation; international treaty compliance; and adjudication of Texas' water rights, including water rights management, permitting, and enforcement experience.

Settemeyer served as Texas' member of the Association of Western States Engineers and represented Texas' members on the Western States Water Council. His experience includes coordination of issues, including implementing federal contracts, involving federal agencies, such as the Bureau of Reclamation, the Army Corps of Engineers, the U. S. Geological Survey, the U. S. Fish and Wildlife Service, and the International Boundary and Water Commission. Settemeyer ensured Endangered Species Act compliance as a member of the Rio Grande silvery minnow recovery team and as a representative on the Edwards Aquifer Recovery Implementation Program.

Settemeyer received a B.S. in Agricultural Engineering from Texas A&M University and an M.S. in Agricultural Engineering from the University of Wyoming. He is a registered Professional Engineer in Texas.

**Megan Ingram**

Megan serves as a Research Analyst with the Foundation's Armstrong Center for Energy & the Environment.

Born and raised in Austin, Megan is a graduate of Texas A&M University, where she earned a Bachelor of Science in Environmental Studies and a minor in Business. Upon graduation, she came to the Foundation first as a policy intern before joining the team full-time.

About the Texas Public Policy Foundation

The Texas Public Policy Foundation is a 501(c)3 non-profit, non-partisan research institute.

The Foundation's mission is to promote and defend liberty, personal responsibility, and free enterprise in Texas and the nation by educating and affecting policymakers and the Texas public policy debate with academically sound research and outreach.

Funded by thousands of individuals, foundations, and corporations, the Foundation does not accept government funds or contributions to influence the outcomes of its research.

The public is demanding a different direction for their government, and the Texas Public Policy Foundation is providing the ideas that enable policymakers to chart that new course.

