

SENATE COMMITTEE
ON
WATER, AGRICULTURE &
RURAL AFFAIRS





Senate Committee on Water, Agriculture & Rural Affairs

Senator Charles Perry, *Chairman*

Members: Senator Drew Springer, Vice-Chair; Senator Brandon Creighton; Senator Sarah Eckhardt;
Senator Roland Gutierrez; Senator Nathan Johnson; Senator Lois Kolkhorst; Senator Beverly Powell; Senator Larry Taylor

December 16, 2022

Dear Members and Fellow Texans:

Enclosed is the interim report for the Senate Committee on Water, Agriculture & Rural Affairs. In direct response to the interim charges provided by Lieutenant Governor Dan Patrick, the Committee hosted hearings on a variety of issues affecting the state's water supply, workforce needs, agriculture industry, and the impact on rural Texas due to the crisis at the border. I would like to extend my thanks to the Lieutenant Governor for his leadership and interest in not just the needs of all Texans but specifically rural Texans. I would also like to thank the members of the Committee for their engagement as we enter what looks to be a groundbreaking 88th Legislative Session. These recommendations should help guide the 88th Legislature in making the best use of a once in a lifetime opportunity.

All roads lead to future water supply. Without a sustainable and safe drinking water supply, our state cannot support future growth and new industries. We must commit to a bold future where water supply and infrastructure top the list of issues in which our state should address.

The interim charges related to water should serve as a call to action. Since the dawn of time, all living things - civilization, wildlife, and the plants to support them - have moved, migrated, or established themselves where water was available. There is an expectation and/or maybe a false sense of security that Texas has water supply to meet the needs of tomorrow. The fact is: it doesn't. The recommendations in this report will begin the long road to water supply security.

Rural Texas doesn't ask for or require much, but there is a continued deficit in the basics of life. Rural healthcare, water infrastructure, broadband connectivity, and technology to prepare the children of today for a workforce of tomorrow are all needs in Rural Texas. Crime due to the border influx, limited resources to enforce law and order, workforce shortages in all disciplines, combined with drought and weather related events impacting the agricultural community are all realities with real costs. Small communities who are responsible for the food, fuel, and fiber that continues to rank in the top budget drivers of the state, often find themselves with a tax base that hasn't kept up with inflation and is subject to less population to pay for basics. Lack of action could cause rural communities to fade into the past and all the economic benefits with it.



That said, it is the wildcat, independent, risk taking, hard-working family values that are embedded in the DNA of the rural Texan that make Texas what it is. If this is lost, the Texas the world identifies with will be a distant memory. As chairman, working with my legislators in the 88th Legislative Session, we can do a lot to prevent the preventable from happening. Thanks to all who contributed during this interim, together we are better.

Respectfully,

A handwritten signature in black ink that reads "Chad Perry". The signature is written in a cursive, slightly slanted style.

Chairman Perry

Senate Committee on Water, Agriculture & Rural Affairs



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December 16, 2022

**The Honorable Dan Patrick
Lieutenant Governor of Texas
Members of the Texas Senate
Texas State Capitol
Austin, Texas 78701**

Dear Lieutenant Governor Dan Patrick and Fellow Members:

The Senate Committee on Water and Rural Affairs of the Eighty-Seventh Legislature hereby submits its interim report including findings and recommendations for consideration by the Eighty-Eighth Legislature.

Respectfully submitted,

A handwritten signature in black ink that reads "Chad Perry".

Senator Charles Perry, Chair

A handwritten signature in black ink that reads "Drew Springer".

Drew Springer, Vice-Chair

A handwritten signature in black ink that reads "Nathan Johnson".

Senator Nathan Johnson

A handwritten signature in black ink that reads "Brandon Creighton".

Senator Brandon Creighton

A handwritten signature in black ink that reads "Lois Kolkhorst".

Senator Lois Kolkhorst

A handwritten signature in black ink that reads "Sarah Eckhardt".

Senator Sarah Eckhardt

A handwritten signature in black ink that reads "Beverly Powell".

Senator Beverly Powell

A handwritten signature in black ink that reads "Roland Gutierrez".

Senator Roland Gutierrez

A handwritten signature in black ink that reads "Larry Taylor".

Senator Larry Taylor





December 15, 2022

Chairman Charles Perry
Senate Committee on Water, Agriculture and Rural Affairs

Chairman Perry,

We would like to extend our gratitude to you and your staff for your hard work during this interim. The Committee took on some of the important issues our state faces, such as safeguarding our water sources and agricultural sector which provides Texans, Americans --and indeed people around the world-- with nutritious food. Our Committee's work amplifies the voices and needs of rural Texans to the benefit of every Texan.

We take seriously our responsibility as members of the Water, Agricultural and Rural Affairs Committee, and deeply appreciated the lengthy conversations we had on issues such as water infrastructure, groundwater management, and workforce issues in rural Texas. We especially appreciated the balance between expert testimony from our hardworking state agents and the personal testimony of our equally hardworking Texans from counties such as Bastrop, Brazos, Goliad, Lee, and Lubbock on how these issues affect them in their daily life. We look forward to continuing to work with you this session to ensure Texas is able to support its population now and in the future by appropriately managing its water supply and investing in its water and wastewater infrastructure.

We are proud to add our signatures to this interim report, however we would be remiss if we did not express our concerns with the language and tone of Interim Charge #6, on the impact of immigration on rural Texans. The charge to the committee was to "Consider the Federal government's open border policies and practices of releasing illegal immigrants in rural areas of the state. Report on the impact to rural Texas, and their local ability to address social, health, and law enforcement needs." Setting aside the fact that there is an entire Senate committee dedicated to Border Security, the much-repeated lawless and open border narrative is distracting at best and harmful in its worst iterations.

In the last 20 years, U.S. Border Patrol has nearly doubled in size, from [fewer than 10,000 agents](#) to now [more than 19,500](#). The Biden Administration has requested [nearly \\$20 billion in funding](#) for the Department of Homeland Security for FY23 (an increase of \$6.5 billion from the previous fiscal year), including billions of dollars for border security and interior immigration enforcement. Additionally, the Biden Administration has expelled more than 1 million people in the first 11 months of this fiscal year, on top of a million-plus expulsions conducted during the previous fiscal year under Title 42. The federal government has fully acknowledged that there is likely to be an influx of migrant crossing once Title 42 ends, and they are [preparing accordingly](#), including a humanitarian parole program to ease the strain as well as bolstering resources to address increased volumes and expedite asylum claims. In light of their financial and administrative dedication to border security, we cannot agree with the statements that the federal government is incentivizing rural immigration and shirking its duty to border security.

It is true that economic, environmental, and geopolitical issues around the world have led to an unprecedented number of people being displaced globally, more on record than ever before. The federal government has a responsibility to address this humanitarian issue, and only Congress can pass legislation that addresses the root causes of migration, fixes the immigration system, and strengthens legal pathways. I could not agree more with the report that the federal government can and should update the visa system and its limits and quotas to reflect the current and future needs of our country. This would address both the problems of unauthorized migration and the workforce challenges that rural Texas is facing.

We share a commitment to working together to find the solutions to address these issues, particularly the strain on local resources. We are particularly concerned about rural hospitals, which provide care to a unique population as well as serve an important role in the local workforce ecosystem. The Texas Department of Agriculture testified before the Committee that they had no data on the effects of increased illegal immigration on rural health systems, while there are numerous external data sources showing that immigrants tend to contribute more in taxes than the cost of services they consume. Blaming immigration and immigrants for the strain on rural healthcare systems is not supported by any of the data presented to the committee. We are hopeful that the Senate will seriously examine solutions to address the issues of access to quality healthcare in the rural communities of Texas.

We look forward to continued conversations on the critical issues that affect all Texans, as we know that there is no Texas miracle without access to clean water, a nutritious, secure food supply, and a qualified workforce across all sectors. We thank you again for your dedication to this committee and to the people of Texas.

Sincerely,



Sarah Eckhardt
State Senator, District 14



Roland Gutierrez
State Senator, District 19



Beverly Powell
State Senator, District 10

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NATHAN JOHNSON
STATE SENATOR • DISTRICT 16

December 14, 2022

The Honorable Charles Perry
Chair, Senate Committee on Water, Agriculture & Rural Affairs
P.O. Box 12068
Capitol Station
Austin, TX 78711

Sincere thanks for your leadership as Chair of the Senate Committee on Water, Agriculture & Rural Affairs, and to your staff for their productive diligence during the interim, including in particular the completion of the proposed interim report. I have added my signature to the report. Though I concur generally in the contents of the report, I do take exception to certain areas, and accordingly submit the following comments.

The report refers multiple times to an “open southern border”, including within the text of Interim Charge #6. I cannot agree that the border is any more or less open than it has been in the past, nor that it should be described as open at all, and in any event the reference is misleading and politically charged. Not a single inch of existing border wall has been taken down. There are more immigration enforcement officers active than ever before. More, not less, technology has been deployed for detection and deterrence than ever before.

Texas is a border state, and we must therefore take seriously the effects of immigration, and immigration policy, on our resources, safety, and workforce. That task deserves language that accurately describes the border and immigration enforcement.

I note, too, that we have a border committee. This is not it.

A handwritten signature in blue ink that reads "Nathan Johnson".

Senator Nathan Johnson
Senate District 16



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Executive Summary / Action Plan

The Committee on Water, Agriculture & Rural Affairs Interim Report covers a wide range of topics that address the issues the state faces. The Committee held three hearings, undertook research and outreach with stakeholders, and ultimately produced the report that follows. Texas and in particular, rural Texas, has challenges relating to critical infrastructure and workforce. Our rural residents are on the defense against the effects of an open southern border which allows for deadly narcotics to flood our streets, private property damage, straining local resources, and imposing increased medical costs on the counties which must provide medical care to those in need. The agricultural industry is facing thefts and more enforcement tools are needed.

Finally, our most precious resource, water, requires careful planning and development with bold ideas to sustain continued growth. Water supply must be a significant part of the infrastructure conversation in Texas. Developing, acquiring and preserving the current supply for public and industry use needs to be a priority no different than that of roads and bridges. The 88th legislature has the opportunity to make lasting investments in rural and statewide infrastructure that will keep Texas the best state to live and work.

Interim Charge #1

Research and testimony from the May 10, 2022, Committee hearing support the need for water infrastructure funding from the state for small and mid-sized communities. Following events like Winter Storm Uri, where water infrastructure failed, and the drought during the summer of 2022, where every drop counts, Texas must again lead the nation in planning for growth and economic success.

Recommendations

- Texas should dedicate funding to existing funds such as the Rural Water Assistance Fund, Water Assistance Fund, and others directing the TWBD on how to utilize the resources.
 - A portion should be allocated towards small to mid-sized utilities to improve water infrastructure and minimize water loss.
 - Another portion of this fund would go towards future water supply projects such as desalination, produced water development, aquifer storage & recovery, flood storage, and others.
 - The remaining would be appropriated for water conservation measures related to new development such as xeriscape or other drought resistance landscaping.
- To support the infrastructure effort, the state should invest in more validation studies for water loss audits at the TWDB. Additionally, more incentives to complete water loss audits should be applied to encourage better data collection.
- The state should also support the efforts of the TWDB to provide technical assistance to rural systems when applying for funding.

Interim Charge #2

Texas Water Development Board oversees and produces the State Water Plan, a leading achievement in the country. Using a ground up approach, Texas can get local solutions in the forefront of water supply planning.

No process is without flaws and the state has an opportunity to move the needle forward with future water supply development. It's time for Texas to get serious about securing future water supply for generations to come. The 88th legislature has an opportunity to employ innovative water technology strategies, creating new water supply for a growing state.

Recommendations

- The committee recommends appropriating funds to develop new water supply opportunities. Texas, partnering with the private sector, should invest in water acquisition from neighboring states and build the infrastructure to transport the water while laying other critical infrastructure at the same time such as broadband. Large scale marine and brackish water desalination plants as well as produced water treatment plants, and other projects that create a *new* water source would be considered eligible. Projects must certify the large acre feet of potential supply with applications based on the amount produced and ability to reach different regions of the state. In specific cases, research into innovative water technologies that the TWDB deemed plausible would be eligible. This is a national conversation that needs to be led by Texas, including all appropriate federal agencies such as the United States Army Corps of engineers, Federal Emergency Management Agency (preventive dual flood and supply opportunities), and Department of Interior in the promotion of water supply development. It is past time for the Eisenhower of water to step up. The initial investment would go towards loans with some eligible for principal forgiveness depending on the population served in conjunction with an evergreen repayment concept to the fund for future funding stability.
- TWDB should implement feasibility surveys of the projects in the plan to push strategies that have attainable completion dates. Working with the Regional Water Planning Groups, TWDB should remove projects from the plan and work with the groups to replace them with other strategies.

Interim Charge #3

Groundwater conservation districts are the designated gatekeepers of Texas groundwater supply. The need for accurate and timely scientific data is critical when permitting groundwater. Specifically, regarding the basin of origin, if the science proves to be inaccurate, or better science enters the picture, and individual well-owners are impacted due to large water export permits, there should be a remedy for the for the landowners. Solutions could be funds to drill wells deeper to reach water or other compensatory means for those where the taking occurred.

Recommendations

- Encourage groundwater conservation districts to maximize tools such as export fees and contracts to adequately plan for mitigation.
- Texas should invest in updated groundwater availability models at the Texas Water Development Board. Additionally, the state should consider grants to groundwater conservation districts to employ the best available science at a local level.

- Encourage districts to incentivize and perform outreach to the benefits of data to individual landowner for the use of well meters.
- Continue to replenish the Agriculture Conservation grant funding for incentives for drip irrigation and other conservation technologies that have a proven record of water savings.
- Greater education to the public, including the public schools as to the importance of water conservation.

Interim Charge #4

Industry in rural Texas continues to drive the state's economy whether it's oil & gas, agriculture, regional healthcare, infrastructure, or travel. For the state to succeed, Texas must continue to invest in job creation and development in rural communities. Basic infrastructure is the key to rural economic development in rural Texas. Good education, water, healthcare, roads, and global connectivity, physical goods export and broadband (reliable, accessible and affordable) are the factors that allow the workforce and job opportunities to continue.

Recommendations

- We must focus on the industries where rural and statewide workforces are dwindling. Our state's water and wastewater plants will face a 30-50% reduction in their experienced workforce over the next ten years. Programs like the Texas Rural Water Association's apprenticeship program will encourage workers to train in an accelerated program to enter the workforce ahead of their competition is one example of a rural need with statewide implications. The committee recommends legislation to temporarily suspend the education requirement of a high school diploma or GED as a prerequisite for obtaining Class D water or wastewater operator license in Texas. If a high school student has successfully completed prerequisite Texas Commission on Environmental Quality training coursework and a passing score on the applicable licensing exam to receive a Class D license, they could receive a provisional license to begin work under a direct supervision of a licensed professional. Once the individual graduated or earned their GED, the license would become official. This program would represent other operators in training programs in the state.
- The committee recommends the development of the state premium insurance tax credit to encourage investment in rural businesses. Approximately 19,449 businesses would be eligible for the program as of October 2022.
- Investment in rural Texas doesn't end with job training and dollars. In fact, it begins with our schools. In rural communities, organizations such as FFA and programs such as the Roscoe ISD career and education program must be encouraged. Access to the global economy thru technology is critical to retain and recruit youth in rural Texas. All efforts to reliable and quality broadband must be encouraged. Sustainable partnering with industry and federal funding must be a priority of the 88th legislative session.
- FFA and other agricultural curricula should be expanded, specifically to public school children in urban areas to give awareness how food supply meets food demand.
- In agrarian areas, public schools and local partnerships should be encouraged to “own the strength” of the community and region. The opportunity to capitalize on a community's strengths and values cannot be overlooked. Lubbock Independent School District is

building an Agricultural STEM education center, supporting the regions global agricultural footprint.

- Compulsory education beyond 16 must become a conversation as to what that is in order to meet the challenges of tomorrow's workforce. Specialty trades, technology jobs, and the support of industries involved in training programs with students whose passions and skills already align for the careers of the future at 16 needs to become an option.

Interim Charge #5

Year-round Daylight Savings Time (DST) remains a federal issue. Until the states are given the ability to adopt year-round DST, Texas only has one option, which is to either observe DST for the 238 days every year, or not. States can name daylight savings time the year-round standard time pending federal approval.

Interim Charge #6

All Texans, and all of America face many dangers related to border security. The real damage caused by those with criminal intent not caught will become more prevalent as time passes. Those with criminal intent continue to be the hidden danger associated with open border policies with the affects felt in the most horrific ways. The lack of a cohesive, predictable and lawful immigration system for workforce need has created a crisis in the rural agricultural community. The impact on the workforce necessary to secure a safe and timely food supply domestically cannot be understated. This can also be said for many industry segments.

From property damage to drugs in their communities, to strained resources in healthcare and law enforcement, the communities along the border and rural Texas cannot sustain the number of crossings into the state.

While border security has always been a federal issue, it has been a problem that Texas has had to deal with. Texas has stepped up and must continue to prepare for the impacts of an open border while differentiating those seeking to do harm with those seeking work opportunity.

Recommendations

- The foothold of a sophisticated and well-connected criminal syndicate under cartel or other organized or organizing crime syndicates cannot be underestimated. Stash houses and human trafficking are not unique to urban America. The state must form coalitions with of other states with border issues to force the appropriate Federal response. Additionally, international industry groups should have a path to create workforce and commerce in which they are responsible for oversight of the workforce.
 - The state must continue to find ways to catch dangerous criminal immigrants, empowering local enforcement to catch and prosecute.
- The balance between those seeking opportunity, providing solutions for the workforce challenges, and stopping illegal immigration is an admirable and common-sense goal. Framework exists for success and only needs updating and resources to achieve the goal of an opportunity for all and enforcing the rule of law.
 - Texas should encourage the Federal government to revisit the Visa system and their limits and quotas. Additionally, the system should take advantage of

technological advancements to track those entering for work but not wishing to remain to become a citizen on a more regular, seasonal approach. By creative approaches with employer partnerships, supply and demand for workforce needs can be met. Economic sanctions and all other tools available should continue to be used to discourage illegal immigration.

Interim Charge #7

Texas faces a skilled workforce shortage in the meatpacking industry.

Recommendations

- The committee recommends programs which cover the skills required to operate the production at meat packing facilities. Continued partnerships with local high schools and community colleges can succeed in keeping qualified workforce available to companies.
- The state should develop a system in the state that allows small-scale producers to utilize custom-exempt slaughterhouses throughout Texas.
- FFA and other agricultural curricula should be expanded, specifically to all children in public schools to give awareness to how food supply meets food demand.

Interim Charge #8

Cattle ranchers across the state have been affected by theft of their herd.

Recommendations

- The committee recommends the creation of training for local district attorneys, prosecutors, and judges relative to agricultural crimes, applicable laws, impacts on producers, and how to properly quantify restitution amounts. Training can be delivered by special rangers through certified continuing education institutions.
- The state should also consider the implementation of stricter violations for agricultural theft of pharmaceuticals.

Interim Charge #9

Senate Bills 8, 601, 905, and House Bill 3516 are all important pieces to our state's water supply puzzle. Their implementation by all agencies and stakeholders will set the stage for future resource and mitigation conversations.

Recommendations

- The state should continue to invest in the State Flood Plan and pay careful attention to the findings from Texas Water Development Board.
- The Texas Produced Water Consortium should continue at Texas Tech University with appropriations for pilot projects and lab testing.
- The Texas Railroad Commission should implement House Bill 3516 in its entirety as quickly as possible.

Interim Charge #1

Evaluate the state's water infrastructure. Study and make recommendations on options to upgrade and update water infrastructure to address deferred maintenance, disasters, and water loss.

Committee Hearing Information

The Committee held a hearing on May 10, 2022, to hear testimony from invited stakeholders and the public on water infrastructure in Texas.

Invited testimony from the following persons:

- Jeff Walker, Executive Administrator, Texas Water Development Board
- Sam Marie-Hermitte, Assistant Deputy Executive Administrator, Texas Water Development Board
- Jessica Pena, Deputy Executive Administrator, Texas Water Development Board
- Toby Baker, Executive Director, Texas Commission on Environmental Quality
- Thomas Gleeson, Executive Director, Public Utility Commission
- Sarah Kirkle, Director of Policy and Legislative Affairs, Texas Water Conservation Association
- Jason Knobloch, Environmental Services Director, Texas Rural Water Association
- Jeremy Mazur, Senior Policy Advisor, Texas 2036

Water Loss in Texas

Water loss is the difference between the volume of potable water delivered to the distribution system and the volume of potable water authorized for consumption for a water supplier or its customers.¹ There are two types of water loss: apparent loss and real loss.² Real loss is the water physically lost through the system from breaks and leaks in water mains and other connections and pipes. Apparent loss refers to water that is consumed but not properly measured or billed. The water loss could be attributed to under-billed water through meter inaccuracy, data errors, and unauthorized consumption.³

All public water systems in the state with over 3,300 connections or a financial obligation to the Texas Water Development Board (TWDB) are required to submit a water loss audit annually. All other retail public water suppliers submit to TWDB every five years.⁴ In 2013, the Texas Legislature appropriated funds to TWDB to consolidate the Water Use Survey, annual Water Loss Report, and annual Water Conservation Report. The agency was also required to create an online tool and their reports are to be submitted and posted on the TWDB website.⁵

¹ Email communication from Bryan McMath, Director Government Relations, Texas Water Development Board, October 20, 2022 (on file with the author).

² *Id.*

³ *Id.*

⁴ "Water Loss Audit," Texas Water Development Board, <https://www.twdb.texas.gov/conservation/municipal/waterloss/index.asp>

⁵ "Background on Historical Water Loss Audit and Conservation Annual Report Data," Texas Water Development Board, file:///C:/Users/S7700AQ/Downloads/Historical%20Data_version2%20background.pdf.

Total, the TWDB estimates 158,373,860,000 gallons are lost per year or 13.4% of all distributed water.⁶ Estimated real loss was 136 billion gallons and apparent loss was 22 billion gallons per year.⁷

Water loss varies across the state. When divided by regional water planning areas, the areas which are predominantly rural such as Regions A (Panhandle), E (Far West Texas), and F are the top three highest median water loss per connection per day.⁸ All regions except for Regions A(Panhandle), J (Plateau) and M (Rio Grande) have had an increase in their real loss per connection per day from 2015 to 2020.⁹

In addition to the TWDB's work in water loss audits, the National Wildlife Federation (NWF) recently completed a year long water loss study in Texas. The results of the survey showed that Texas is losing at least 572,000 acre feet per year which is equivalent to the 2020 annual water needs of Austin, Ft. Worth, El Paso, Laredo, and Lubbock combined.¹⁰ The estimated loss per connection per day is 51 gallons.¹¹

There are potential savings according to NWF. By creating a moderate and cost-effective process, the state could cut current water loss in half, saving about 249,000 acre feet per year. This would require a 75th percentile performance level from utilities.¹²

There are costs associated with water loss prevention. When compared with the costs of a water supply strategy, water loss mitigation is favorable.¹³

Type	Cost per acre foot		Type	Cost per acre foot
<ul style="list-style-type: none"> Acoustic active leak detection and repair 	\$73-239	VS	Supply-side projects in the State Water Plan	\$151-252
<ul style="list-style-type: none"> Large meter replacement programs 	\$112-202			
<ul style="list-style-type: none"> Advanced pressure management 	\$151-252			

Information provided by National Wildlife Federation; Costs are in Real Dollars.

⁶ Email communication from Bryan McMath, Director Government Relations, Texas Water Development Board, October 20, 2022 (on file with the author).

⁷ *Id.*

⁸ "Water Loss Audit Summary Report, 2021, Region," Texas Water Development Board, <https://www3.twdb.texas.gov/apps/reports/WLA/SummaryAuditsByCategory>.

⁹ *Id.*

¹⁰ "Hidden Reservoirs: Water Loss in Texas," Texas Wildlife Federation, 2022.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

The State of Water Infrastructure in Texas in Small Systems

As the TWDB has found, rural or smaller systems have higher water loss than other parts of the state.¹⁴ Texas Rural Water Association (TRWA) surveyed member systems in January 2022 on deferred maintenance and infrastructure. According to TRWA, there are approximately 838,797 miles or 4.4 billion feet of water own and operated by community water systems in Texas.¹⁵ The water systems have several materials used in their pipes including: PVC, ductile iron, asbestos concrete, galvanized, or the system did not know.¹⁶

Pipes' life expectancy can be impacted by many factors, but a major issue is the condition of the soil around the pipes. Texas is home to clay, sand, limestone, and flint rock. Depending on the type of soil, pipes need to be installed knowing that changes in the soil moisture could negatively impact the structure.¹⁷ Different soil types also have differing reactions to drought.¹⁸

Other factors can affect the life expectancy of pipes such as pressure and temperature. The state has several areas in aquifers when the water is pumped to the ground, the temperature is too high and the water must be moved to above ground storage tanks to cool.¹⁹ Additionally, different topography in the state can affect pressure in the pipes. These two circumstances negatively effect the lifespan of the water line.²⁰

The TRWA found that 70% of the water lines in the state are over 20 years old. 57% are over 40 years old.²¹ According to the survey, the average date of installation of the pipes in the state was 1966.²² Generally, water transmission pipes have a 35-year life expectancy. Based on the numbers, TRWA estimates that 587,158 miles, or 70% of water line infrastructure in the state is beyond, at or neared the end of the life expectancy; 57% is exceeding; and 13% is at or new it.²³ With all factors considered, water lines over 30 years old generally have a higher rate of leakage or breakdown.

The costs to replace water lines also have several factors. Geographic location also plays a part in pipe replacement. Sandy or clay soil could be easier to excavate as compared to Central Texas with rock.²⁴ Service location and the availability of GIS technology or easements, supply chain, labor availability, future growth, and regulatory requirements are some of the hurdles to pipe replacement in the state.²⁵

¹⁴ "Water Loss Audit Summary Report, 2021, Region," Texas Water Development Board, <https://www3.twdb.texas.gov/apps/reports/WLA/SummaryAuditsByCategory>.

¹⁵ "Water Line Infrastructure Survey," Texas Rural Water Association, May 2022.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

TRWA estimated the average cost of pipe replacement, labor and materials, to be at least \$75 per foot or more. Based on this, to replace all water infrastructure needs would be \$332 billion.²⁶ However, the state could make a significant impact by addressing the water infrastructure over 40 years of age. The approximate cost to replace 480,000 miles of pipe would be \$190 billion.²⁷

Water System Needs in Texas

The Texas Water Infrastructure Network (TXWIN) recently conducted a needs assessment survey among members, and the broader water supply community.²⁸ Eighty-eight members responded and of those, 61% serve a population less than 20,000 and 12% serve a population between 20,000 and 60,000.²⁹

Sixty-four responding systems represent either an urban population and growing (31%) or a rural population and growing (50%).³⁰ When asked to rank their water infrastructure needs by priority, 51% responded that aging infrastructure was a top priority followed by 25% for meeting the needs of population growth.³¹

When asked about the health of their water mains, 97% of respondents believe that 25% of their water mains must be replaced. Thirty eight percent believe it's 25% or less, 31% believe they must replace between 25-50% of their water mains, 20% believe it's between 50-75% of their lines, and 8% believe they will have to replace almost all their water mains due to aging infrastructure.³²

Even with the large number of responses who need to replace aging infrastructure, 43% believe capital expenditures over the next five years will be under \$10 million. Thirty percent believe their costs to be between \$10-50 million.³³ The number goes up with a ten-year outlook. Thirty one percent believe their costs will remain under \$10 million while 26% believe their costs will exceed \$100 million.³⁴

The drought didn't help the water infrastructure in the state. Sixty eight percent of respondents feel like their systems will face some impact on their repair costs relating to the drought. Many members expect to seek help with 40 respondents indicating that in the coming year they would look to TWDB for funding assistance and 70% had received funding from the agency in the last five years.³⁵

While many in the state expect to take advantage of the Infrastructure Investment and Jobs Act (IIJA) funds, 72% of the respondents do not have projects in the Clean Water State Revolving Fund or Drinking Water State Revolving Fund Intended Use Plan, a requirement to receive these

²⁶ "Water Line Infrastructure Survey," Texas Rural Water Association, May 2022.

²⁷ *Id.*

²⁸ "Texas Water Capital Needs Survey," Texas Water Infrastructure Network, October 2022.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

funds and IJJA funds.³⁶ While 24% of the water systems intend to apply in the 2024 round of funding, 33% indicated that the process was too cumbersome to complete.³⁷ If the Texas Legislature appropriated more non-federal funding, 90% of the respondents indicated they would apply for it.³⁸

Many indicated they would be most likely to apply for grants or principal forgiveness loans.³⁹ When asked about their water rates, the respondents were split on whether their water rates were set at a sufficient rate to cover their immediate and future capital project needs. In order to meet capital needs, only 24% responded they would consider using a public private partnership to fund their projects.⁴⁰

Public Water System Failures & Winter Storm Uri

The TCEQ provides oversight of public water systems in the state to issue drinking water advisories. The advisories explain that there is a possible contamination in the system.⁴¹ The following are examples of the types of contamination: a defect that creates a way for contamination to enter the system; water main breaks; water treatment process failures; low or negative pressure in the distribution system; flooding; or the introduction of a non-drinking water source into the distribution system.⁴² A water system may issue one of three advisories to warn consumers to take action when using their water.

A boil water notice is issued when the water may contain disease causing contaminants. In order to clear a boil water notice, the system must be disinfected. Until the notice is lifted, consumers must continue to boil water used for drinking, brushing teeth, washing dishes, and cooking.⁴³ A do not consume advisory is when consumers cannot drink the tap water and must find another source for drinking, brushing teeth, washing dishes, and cooking.⁴⁴ This advisory means that water cannot be consumed and there could be chemical contamination.⁴⁵ Finally, a do not use advisory is the most severe and restricts all use by consumers. This event would occur if the chemical contaminant cannot meet skin, be consumed, or inhaled.⁴⁶

A boil water notice (BWN) is the most common among consumers to be issued by water systems. The following are when a BWN is required to be issued: low distribution pressure; water outages; *E. coli* contamination; failure to maintain adequate disinfectant residual levels; elevated finished

³⁶ "Texas Water Capital Needs Survey," Texas Water Infrastructure Network, October 2022.

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ "Drinking Water Advisories, October 2022," Compiled by the Texas Commission on Environmental Quality, October 2022 (on file with the author).

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

surface water turbidities; or other circumstances which indicate a contamination in the drinking water supply.⁴⁷

BWN Reason	2022	2021	2020	2019	2018
Low Distribution Pressure	1115	2612	182	700	1103
Water Outage	923	1175	1396	1208	713
Disinfectant Residual	77	58	15	81	63
Microbiological	36	15	7	19	28
Turbidity	22	5	1	8	41
Other*	21	82	107	27	45
Total	2194	3947	1708	2043	1993

Information provided by the Texas Commission on Environmental Quality.

A public water system must issue a BWN within 24 hours of meeting the any of the mentioned criteria.⁴⁸ The system must also inform TCEQ within 24 hours of issuance. Within 10 days, the system must submit a copy of the certificate of delivery which documents how they distributed the BWN to customers.⁴⁹ There are several methods of delivery available to the water system and the BWN should be multi-lingual and tailored to the target population.⁵⁰

Boil Water Notice Delivery

System Type	Delivery Options
Community	Furnish copy to radio/tv in the service area Publication in local, daily newspaper Direct delivery or continuous posting* Electronic delivery or alert systems (reverse 911)
Non-community	Direct delivery or continuous posting* Electronic delivery or alert systems (reverse 911)

Table Provided by Texas Commission on Environmental Quality.

**If continuous posting is used, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.*

There are several requirements to rescind a BWN. For low pressure issues, water distribution must be maintained at 20 psi. Additionally, the area has been flushed and disinfected in each storage

⁴⁷ "Drinking Water Advisories, October 2022," Compiled by the Texas Commission on Environmental Quality, October 2022 (on file with the author).

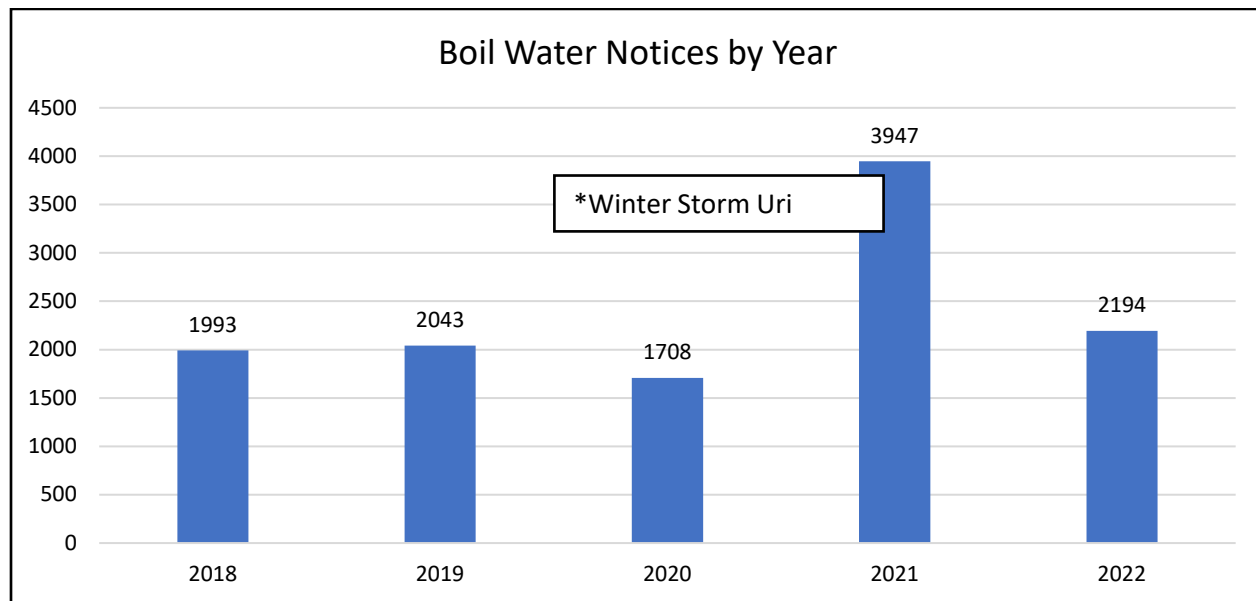
⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

tank and throughout the distribution system.⁵¹ Turbidity must also pass appropriate levels and the system test at least two samples, although more can be done depending on the situation.⁵²

If the BWN fell under TCEQ requirements, the water system must submit compliance data showing all criteria have been met. Within 24 hours of meeting compliance, a system must notify consumers that the system meets standards, typically through the same means as the original BWN was broadcast.⁵³



Information provided by Texas Commission on Environmental Quality.

Winter Storm Uri had contributed to a record high number of BWNs in 2021. According to the Texas Commission on Environmental Quality (TCEQ), of the more than 7,000 water systems for which they have jurisdiction, 1,985 systems were under a boil water notice during the storm event.⁵⁴ Total, 16.3 million Texans did not have access to potable water.⁵⁵ Of the systems under a boil water notice following the storm, 1,545 were small systems serving a population less than 3,300.⁵⁶ Without the storm, over 1,900 water systems had a BWN in 2021, showcasing the rising tide of water infrastructure failures in the state.⁵⁷

Water infrastructure has continued to fail following Winter Storm Uri at the beginning of 2022, the City of Laredo experienced a water main break leaving portions of the city without access to

⁵¹ "Drinking Water Advisories, October 2022," Compiled by the Texas Commission on Environmental Quality, October 2022 (on file with the author).

⁵² *Id.*

⁵³ *Id.*

⁵⁴ "TCEQ Plan: After-Action Review of Public Water Systems and Winter Storm Uri," Texas Commission on Environmental Quality, <https://www.tceq.texas.gov/downloads/publications/gi/gi-598.pdf>.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ "Drinking Water Advisories, October 2022," Compiled by the Texas Commission on Environmental Quality, October 2022 (on file with the author).

water.⁵⁸ In June 2022, 165,000 residents in Odessa, Texas were without water following a water main break.⁵⁹

Committee Testimony on Interim Charge #1

Over the last 20 years, several pieces of legislation have passed targeting water loss. In 2003, the legislature required all retail water utilities to submit a water loss audit every five years and the fourth round was collected in 2020.⁶⁰ In 2011, the legislature required all retailers with a financial obligation to submit a water loss audit annually. The following session in 2013, statute was changed to require all retail water utilities with more than 3,300 connections to submit an annual water loss audit and for the TWDB to create thresholds of acceptable water loss for new water supply projects.⁶¹ Finally, in 2017, the legislature required training for those retail water utilities who submit audits. To date, TWDB staff has completed 66 training workshops with over 2,300 attendees.⁶²

There are 3,282 retail water suppliers required to submit a water loss audit every five years and 740 that must submit annually. Of the 740 retail water utilities who submit annually, 394 are rural with population less than 10,000.⁶³

Water loss audits are due May 1st each year. Once received, TWDB staff begin conducting outreach and follow-up to submitted reports. The online reporting application program closes on July 1st and TWDB staff continue outreach efforts.⁶⁴ On September 30th, the data is considered final and will be used as the statewide data set to be compared with previous years. The information will also be sent to the Regional Water Planning Groups for inclusion in strategies in the State Water Plan.⁶⁵

Median real loss is considered the industry standard for tracking water due to physical leakage. In 12 of the 16 Regional Water Planning Groups there was an increase in water loss and only four show a decrease. The most significant changes were in Region E with an almost 70% increase in water loss and Region J with 73.4% decrease.⁶⁶ Possible explanations for the big changes include: the number of audits is so low that any change would be amplified; some systems may have been removed in one year but included in another; or the 2020 information submitted may be more accurate than previous years.⁶⁷

⁵⁸ "City of Laredo expands area under boil water notice," Laredo Morning Times, Zach Davis. February 19, 2022.

⁵⁹ "More than 165,000 people in Odessa still without water after aging line breaks," Texas Tribune, Jayme Lozano, June 14, 2022.

⁶⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Sam Marie Hermitte), Texas Water Development Board.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

In 2020, the TWDB contracted with experts in validation to do a pilot on a validation study for submitted water loss audits. A validation study is considered the industry standard to validate data and includes a validator trained in the audit process participating in a guided discussion with the water loss audit submitter.⁶⁸ TWDB chose 10 small systems to participate in the study with all 10 with improvements in their data. Of all the systems that changed their assessment score and 8 out of 10 had changes to a key entry which changed their outcome.⁶⁹

In 2020, of the 2,600 audits submitted, 1,900 made it through quality control processes. Of those, 463 with annual submittal requirements were selected to be a part of the statewide average. These systems represent 88% of the statewide real loss volume. According to the numbers, TWDB estimates there are 90 billion gallons per year of recoverable losses in the state which equals 69% of all loss.⁷⁰

Acceptable loss could vary by system based on size, population, and volume of water through the system. There is not necessarily a single target number for acceptable loss.⁷¹ The data is available in several forms including by system.⁷²

There are both federal and state funding options available at the TWDB. Since 1957, there are 13 counties that have not received funding in some form from the agency.⁷³ The federal programs are the Drinking Water State Revolving Fund (DWSRF) and the Clean Water State Revolving Fund (CWSRF). DWSRF is for systems to use to comply with drinking water standards. While water loss projects would be eligible under the program, they would not rank very high due to federal prioritization.⁷⁴ The CWSRF is only for sewer projects; water loss would not be an eligible project.⁷⁵

There are three major state funding programs at the TWDB: State Water Implementation Fund for Texas (SWIFT), Economically Distressed Areas Program (EDAP), and the Texas Water Development Fund (Dfund).⁷⁶ To be eligible for SWIFT, a project must be in the State Water Plan. Water loss would fall under conservation which ranks as a high priority in the fund. SWIFT is a loan program; however, rural projects get 50% off costs.⁷⁷ EDAP targets inadequate systems under the Texas Commission on Environmental Quality (TCEQ). Water loss is not a measurement for systems under the TCEQ and therefore, EDAP would not be an appropriate fund. Finally, Dfund can be anything water related so water loss would be eligible.⁷⁸

⁶⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Sam Marie Hermitte), Texas Water Development Board.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jeff Walker), Texas Water Development Board.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Id.*

Another possible funding option is through the Infrastructure Investment and Jobs Act (IIJA) which was passed by Congress and signed into law November 15, 2021.⁷⁹ Texas is expected to receive \$616.6 million in the first year. The TWDB applies annually for funding from the Federal government. Both programs have the option to use administrative funds for technical assistance. The funds are discretionary. The fund dedicates money under five buckets of funding.⁸⁰ The following table depicts the IIJA funding buckets.

Drinking Water State Revolving Fund					
Base Program		Lead Service Lines		Emerging Contaminants	
\$197,600,000		\$222,000,000		\$59,000,000	
Grants	\$86,500,000	Grants	\$109,000,000	Grants	\$47,000,000
Admin	\$39,100,000	Admin	\$51,000,000	Admin	\$12,000,000
Loans	\$97,300,000	Loans	\$62,000,000	Loans	\$47,000,000
Clean Water State Revolving Fund					
Base Program			Emerging Contaminants		
\$134,000,000			\$4,000,000		
Grants	\$52,900,000		Grants	\$4,000,000	
Admin	\$7,000,000				
Loans	\$97,000,000				

Information provided by the Texas Water Development Board.

The IIJA funding has additional requirements. The *Buy America, Build America* requires projects to use goods produced in the United States including iron and steel; manufactured goods; and construction materials.⁸¹ While there are waivers, entities must provide market research and on projects with principal forgiveness are eligible.⁸²

On December 21, 2022, the most recent state revolving fund cycle was opened. IIJA guidance was released on March 8, 2022. Because of the guidance release, TWDB pre-emptively had applicants turn in abridged applications by March 4, 2022, if they wanted to be considered for the IIJA funds.⁸³

The largest amount of the IIJA funding is dedicated to the replacement of lead pipes. Texas doesn't know exactly how prevalent the pipes are and the TWDB cannot set aside funding from the IIJA

⁷⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jessica Pena), Texas Water Development Board.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

to do assessments. As an example of the number of lead pipes in the state, the City of Ft. Worth replaced over 280,000 water meters. During that process, they found that only 0.03% of their pipes were lead.⁸⁴

The TWDB has monthly workshops around the state in rural areas. They also have set aside time during those meetings to visit one-on-one with TWDB staff. The agency is also looking at how to contract to get more technical assistance.⁸⁵

According to TCEQ, between February 10-20, 2021, there were over 2,000 boil water notices (BWN) issued in over 200 counties to a population of 18 million Texans.⁸⁶ The reasons given were loss of power, damage to equipment, pressure issues, and dangerous roads. A BWN can be issued for many reasons but mainly are due to a water outage (pressure), e. coli contamination, or turbidity problems.⁸⁷

When a local community issues a BWN, it is typically communicated via radio and television. The water system must inform TCEQ within 24 hours of the problem's discovery. In order to rescind a BWN, the system just needs to fix the issue and provide TCEQ documentation that the issue is fixed.⁸⁸ Over the last five years, 90% of the state's BWNs have been due to low water pressure or water outages.⁸⁹

Following Winter Storm Uri, the Texas Legislature passed Senate Bill 3 and TCEQ completed their Winter Storm Uri After Action Review. SB 3 requires utilities to complete and implement emergency preparedness plans (EPP). The bill effected 4,000 utilities who had to submit their plans by March 1, 2022, and implement by July 1, 2022. As of May 3, 2022, 123 had been submitted and TCEQ had received 840 extensions.⁹⁰ Over 300 did not provide an implementation date. Most of the extensions were due to funding, system updates, contract issues, and staffing shortages.⁹¹

TCEQ also completed their Winter Storm Uri After Action Review which included surveys, round tables, and reviewed rules and regulations around the country. From the Review, the agency released several recommendations.⁹²

⁸⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jessica Pena), Texas Water Development Board.

⁸⁵ *Id.*

⁸⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Toby Baker), Texas Commission on Environmental Quality.

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

TCEQ also does not have data on lead pipe infrastructure in the state. Similar to TWDB, the pipes are on the local level and only come up on a case-by-case basis. As far as TCEQ knows, it is not a lot of pipes.⁹³

The TCEQ is always open to working on regionalization for the state's water infrastructure, but it is often on the wastewater side and not the water supply side. Across the state the challenge is with rural utilities because of the build out between rural communities is too high. Of the utilities in the state, 84% of them are less than 3,300 connections and they are not near large municipalities.⁹⁴

In 2013, the Texas Legislature transferred the rate making process for water utilities from the TCEQ to the Public Utility Commission (PUC) which took effect on September 1, 2014. The agency has original jurisdiction over private utilities and appellate jurisdiction over water supply corporations, cities, and special utility districts.⁹⁵ Rates must be set at a level where water can be acquired, treated, and delivered to all customers. Rates are set as fair and equitable with accurate financial information.⁹⁶

Investor-Owned Utilities (IOUs) located outside city limits must file rate filing packages with the PUC to increase their rates. They are limited to one per year. The PUC also utilizes a system improvement charge that is streamlined for utilities to recover costs for infrastructure related expenditures.⁹⁷ The economic environment is unique with rising inflation and interest rates, so the PUC is considering all factors in rate increases.⁹⁸

The largest water utility in Texas is still smaller than the smallest electric utility. The structure is such that the rate cases are more encompassing for the larger utilities and simple for smaller utilities. Through the contest case process, it is rare that a utility gets the exact rate they requested.⁹⁹ Rate increase requests are usually for operation and maintenance or capital investment in the system.¹⁰⁰

The Texas Rural Water Association (TRWA) conducted a survey of community water systems serving populations 50,000 or less.¹⁰¹ The survey was conducted through the web, email, and in-person at various trade meetings, using GIS mapping, and the Environmental Protection Agency needs survey.¹⁰²

⁹³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Toby Baker), Texas Commission on Environmental Quality.

⁹⁴ *Id.*

⁹⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Thomas Gleeson), Public Utility Commission.

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jason Knobloch), Texas Rural Water Association.

¹⁰² *Id.*

Of the 4,600 water systems, TRWA received 116 responses to use as their sample for calculation estimates. They estimate that there is around 840,000 miles of water lines total with 49% of them PVC and the rest are a variety of different materials.¹⁰³

There are several factors that impact project initiation and costs. The approximate range per foot is \$75-250. Systems are also finding it cheaper to do projects in-house after they save up their reserve funding. The overhead is too high to apply for state or federal funding and the entities can only do small portions of the project at a time.¹⁰⁴ The approximate cost to replace all estimated water lines \$332 billion.¹⁰⁵

Smaller systems face other challenges to apply for funding is staffing and workforce expertise. Often smaller systems have employees that have multiple responsibilities. Additionally, the start of construction timing can take a long-time causing cost to drastically change. Finally, public support whether it's for new bonds to cover costs or rate increases is difficult to achieve.¹⁰⁶

According to the Texas Water Conservation Association, water infrastructure needs far exceed available funding capacity.¹⁰⁷ Based on the EPA needs surveys, TWCA estimates the cost to the state would be \$67.5 billion. A more limited view from the those that have applied for the CWSRF and DWSRF programs would be \$2.5 billion.¹⁰⁸ This total does not include \$2.5 billion in need for flood infrastructure.¹⁰⁹

Accessibility is a key challenge, and many entities cite red tape or rewarding non-compliance as reasons they do not apply for funding.¹¹⁰ 60% of entities in Texas would make cuts to capital programs and an increase in costs would delay projects. The current depreciation of infrastructure outpaces investment opportunities.¹¹¹ TWCA believes that the state can counter these problems by supporting an increase in state funding and removing technical or bureaucratic barriers.¹¹²

Texas 2036 conducted a survey on water issues in the state. They found that 77% of those polled are concerned about more weather disasters effecting their water supply. 9 out of 10 responded that some communities may not have access to water during the next severe drought.¹¹³

According to Texas 2036, the issues highlighted point to the need for more water infrastructure investment. The American Society of Engineers graded Texas water infrastructure a C-.¹¹⁴ The

¹⁰³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jason Knobloch), Texas Rural Water Association.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Sarah Kirkle), Texas Water Conservation Association.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jeremy Mazur), Texas 2036.

¹¹⁴ *Id.*

economic impacts of failing infrastructure and the costs to replace will continue to increase over time. The passage of the IJA provides Texas with over half a billion dollars towards infrastructure in the next five years.¹¹⁵

Recommendations

Research and testimony from the May 10, 2022, Committee hearing support the need for water infrastructure funding from the state for small and mid-sized communities. Following events like Winter Storm Uri, where water infrastructure failed, and the drought during the summer of 2022, where every drop counts, Texas must again lead the nation in planning for growth and economic success.

Using our economic surplus, Texas should dedicate to existing funds such as the Rural Water Assistance Fund, Water Assistance Fund, and others directing the TWDB on how to utilize the funds. First, funding should be allocated for small to mid-sized utilities to improve water infrastructure and water loss. Another portion of this funding would go towards future water supply projects such as desalination, produced water development, aquifer storage & recovery, flood storage, and others. The remaining amounts would be appropriated for water conservation measures related to new development such as xeriscape or other drought resistance landscaping.

To support the infrastructure effort, the state should invest in more validation studies for water loss audits at the TWDB. Additionally, more incentives to complete water loss audits should be applied to encourage better data collection.

The state should also support the efforts of the TWDB to provide technical assistance to rural systems when applying for funding.

¹¹⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Jeremy Mazur), Texas 2036.

Interim Charge #2

Review and make recommendations to complete specific projects identified in the 2022 State Water Plan. In light of recent changes to the global economy, consider the current regulatory process regarding innovative technology solutions to water supply needs, such as marine desalination, and make recommendations for their improvement.

Committee Hearing Information

The Committee held a hearing on May 10, 2022, to hear testimony from invited stakeholders and the public on water supply in Texas.

Invited testimony from the following persons:

- Jeff Walker, Executive Administrator, Texas Water Development Board
- Temple McKinnon, Director of Water Supply and Planning, Texas Water Development Board
- Robert Sadlier, Deputy Director of Water Quality Division, Texas Commission on Environmental Quality
- Jill Csekitz, Technical Specialist, Texas Commission on Environmental Quality
- Kim Nygren, Deputy Director of Water Availability, Texas Commission on Environmental Quality
- Perry Fowler, Texas Water Infrastructure Network
- Kyle Frazier, Texas Desal Association
- Michael Esparza, City Manager, City of Alice
- Neil Deeds, Senior Water Resources Engineer, INTERA
- Richard Whiting, 7Seas

2022 State Water Plan

In January 2022 the Texas Water Development Board (TWDB) released the state's latest State Water Plan (SWP) which outlines the supply and demand for the next 50 years. The report explains the water needs of the state compared to the population increase combined with industry production.¹¹⁶

The SWP estimates that Texas population is expected to increase 73% by 2070 to 51.5 million people from 29.7 million. The increase in water needs is expected to be 9%.¹¹⁷ While the increase in demand is low compared to the population increase, water supply and availability is expected to decline by 18% between 2020 and 2070. The reason for decline is expected to come from lower yield from aquifers and small losses from reservoirs.¹¹⁸

Based on the drought of record, current supply availability, and users, Texas would face a water shortage of 3.1 million acre feet per year in 2020 and 6.9 million acre feet per year if no strategies in the SWP are implemented.¹¹⁹ In order to meet the demands of the state, 5,800 water management

¹¹⁶ "2022 State Water Plan: Water for Texas," Texas Water Development Board, January 2022.

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.*

strategies included in the plan need to come to fruition to provide 1.7 million acre feet of water in 2020 and 7.7 million in 2070.¹²⁰ Water conservation strategies represent the largest portion of projects in the plan at 29%.¹²¹

The SWP doesn't come without a cost. The TWDB estimates that the total cost to design, construct, and implement the 2,400 projects in the plan would cost \$80 billion in 2018 dollars without counting for inflation.¹²² If the strategies in the plan are not implemented, the SWP estimates that 25% of Texans would not have half of their needed supply during a drought and it could cost the state \$110 billion in economic damages and up to \$153 billion by 2070.¹²³

The SWP relies on several different categories of water supply strategies. The top three strategy types in the plan in 2020 are agriculture conservation, surface water, and groundwater.¹²⁴ Agriculture conservation makes up the highest percentage of water strategies at 31.5%. The strategy refers to "changes in irrigation methods, equipment, and crops."¹²⁵ Surface water strategies make up 20.3% of the plan and groundwater makes up 15%.¹²⁶ The table below reflects strategies by 2070 and their makeup in the plan.

Strategy Supplies Breakdown - 2070

Strategy Type	Amount (acre feet/year)
Other Surface Water	25.4% (1,950,727)
Agricultural Conservation	15.6% (1,197,343)
Municipal Conservation	12.7% (977,058)
New Major Reservoir	11.3% (865,939)
Indirect Reuse	9.6% (739,124)
Groundwater Wells & Other	9.2% (704,953)
Other Direct Reuse	4% (304,535)
Aquifer Storage & Recovery	2.5% (193,106)
Seawater Desalination	2.5% (191,615)
Drought Management	2.1% (158,078)
Groundwater Desalination	2% (156,897)
Other Strategies	1% (78,283)
Conjunctive Use	0.9% (66,860)
Direct Potable Reuse	0.8% (62,306)
Industrial Conservation	0.6% (44,401)

Information from the 2022 Interactive State Water Plan.

¹²⁰ "2022 State Water Plan: Water for Texas," Texas Water Development Board, January 2022.

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ "2022 Interactive State Water Plan," Texas Water Development Board, <https://texasstatewaterplan.org/wmstype/AGRICULTURAL%20CONSERVATION>.

¹²⁵ *Id.*

¹²⁶ *Id.*

Total surface water strategies encompass 37% of all water resources by 2070.¹²⁷ Demand reduction in the form of conservation is 30.9% and reuse is 15.1%. Groundwater makes up 14.5% of total water resource strategies and seawater is 2.5%.¹²⁸ There are 21 new major reservoir projects which include new major reservoirs, off channel reservoirs, and indirect reuse projects.¹²⁹ There are 30 groundwater desalination projects and five seawater desalination projects.¹³⁰ Finally, there are 23 aquifer storage and recovery projects listed.¹³¹

Permitting Major Projects in Texas

Texas statute defines waters of the state as "ordinary flow, underflow, and tides of every river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater, and rainwater of every river, natural stream, canyon, ravine, depression, and watershed."¹³² The Texas Commission on Environmental Quality (TCEQ) is the state agency tasked with permitting water rights, discharge, and water and wastewater treatment plants.

TCEQ's role in a new reservoir project depends on the project. If a reservoir is built as flood control and does not impound state water, it doesn't need a water right. However, this does not mean it doesn't have to meet federal requirements. For the new reservoir project to obtain a water right, the project must be included in the regional water planning process as a water management strategy in the State Water Plan (SWP). TCEQ water availability staff use water availability models, or WAMs, to determine if unappropriated water is available in the river basin for the project. Depending on the river basin, some have specific environmental flows which are required. Once the application is reviewed, staff can recommend granting the application and begin the notification of affected persons. TCEQ also notes that there are possible needed approvals from the United States Army Corps of Engineers (USACE), Coastal Coordination Council, Texas Parks & Wildlife Department, TCEQ Water Quality Division, and any other state or federal requirements depending on the location of the reservoir.¹³³ The following chart depicts the process for obtaining a reservoir in Texas.

¹²⁷ "2022 Interactive State Water Plan," Texas Water Development Board, <https://texasstatewaterplan.org/wmstype/AGRICULTURAL%20CONSERVATION>.

¹²⁸ *Id.*

¹²⁹ "2022 Interactive State Water Plan," "Statewide Strategy Supplies Data," Texas Water Development Board, <https://texasstatewaterplan.org/statewide>.

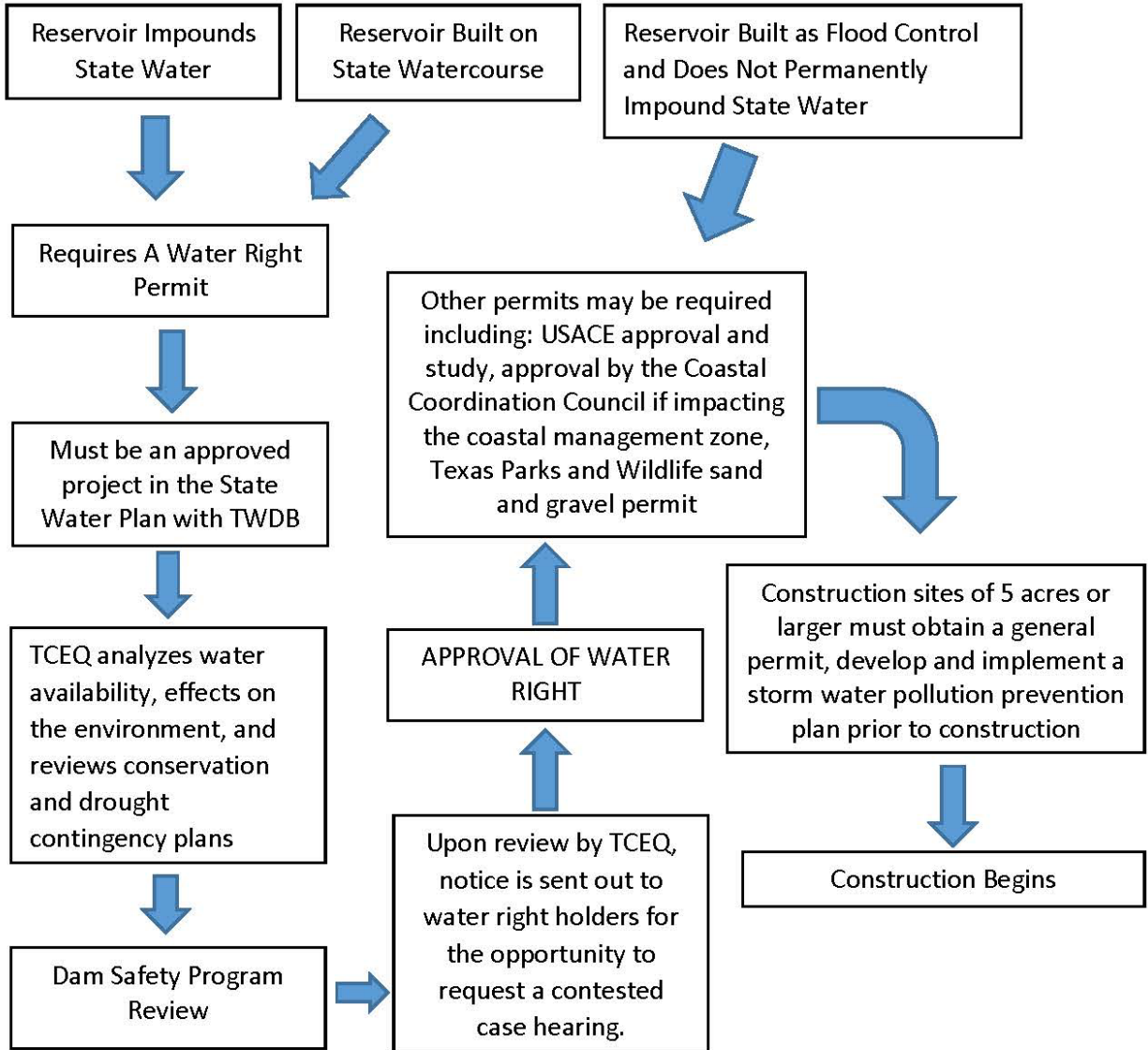
¹³⁰ *Id.*

¹³¹ *Id.*

¹³² Texas Water Code, Chapter 11 § 11.021.

¹³³ Information provided by TCEQ, August 8, 2018 (on file with the author).

TCEQ Reservoir Permitting Process



Information provided by TCEQ (August 8, 2018); Chart created by Committee staff.

Reservoirs can be years in the making. The first new major reservoir to be dedicated, Bois d'Arc Lake, began the planning and permitting process in 2003.¹³⁴ TCEQ did not issue the permit until 12 years later followed three years later with the USACE permit. Construction began in May 2018, a full 15 years after planning began. Reservoir impoundment began in April 2021.¹³⁵ The first water deliveries are expected in Spring 2023.¹³⁶ The lake is 16,641 acres and expected to meet the water needs for the nearly 2 million in the area.¹³⁷

¹³⁴ "Timeline for Projects," Bois d'Arc Lake, <https://boisdarclake.org/>.

¹³⁵ *Id.*

¹³⁶ "Timeline for Projects," Bois d'Arc Lake, <https://boisdarclake.org/>.

¹³⁷ Bois d'Arc Lake, <https://boisdarclake.org/>.

The following table depicts the status of reservoir permits in Texas.

Owner/Name	Issue Date	Capacity (acre feet)	Status
North Texas Municipal Water District (Lower Bois D'Arc Creek Reservoir)	6/26/2015	367,609	Completed
Lower Colorado River Authority (Arbuckle Reservoir)	2/13/2014	52,000 (off-channel)	Under Construction
Upper Trinity Regional Water District (Lake Ralph Hall)	12/11/2013	180,000	Under Construction
Guadalupe Blanco River Authority	9/1/2020	125,000 (off-channel)	Not Started
Dow Chemical Company	8/24/2015	56,760 (off-channel)	Not Started
Guadalupe Blanco River Authority	2/13/2014	150,000 (off-channel)	Not Started
City of Wichita Falls (Lake Ringgold)		275,000	Not Permitted (Referred to SOAH by commission order 4/18/2022)
City of Lubbock (Jim Bertram Lake)		20,708	Not Permitted (Technical review complete, coordinating with the city on timing for an agenda date)
City of Abilene (Cedar Ridge Reservoir)		227,127	Not Permitted (Currently in technical review)
Lavaca Navidad River Authority		50,000 (off-channel)	Not Permitted (Currently in technical review)

Information provided by Texas Commission on Environmental Quality.

Another innovative water technology in the SWP is desalination plants. Desalination refers to removing dissolved salts from water using either a thermal or membrane method.¹³⁸ When the thermal method is employed, saline water is heated creating water vapor which is condensed and collected as fresh water. The membrane process relies on membranes which are permeable to separate salt from water. These can be pressure driven or voltage driven.¹³⁹

There are two types of desalination plants: sea water and brackish water. The type is based on the total dissolved liquids (TDS) in the mixture. Brackish water contains between 1,000 milligrams per liter (mg/l) TDS to 10,000 mg/l.¹⁴⁰ When calculating the cost of desalinated water, one must consider the capital costs, debt service, and operating costs. The average cost for desalinated brackish water is around \$1.50 per 1,000 gallons.¹⁴¹

According to the TWDB, there are 35 municipal brackish desalination plants in the state with collective capacity of 85 million gallons per day (MGD).¹⁴² Depending on the size, scope, and permitting, the time to build a brackish desalination plant varies.

The Kay Bailey Hutchinson Desalination Plant began in 2001 and was opened April 2007. The plant utilizes reverse osmosis to transform brackish water into drinking water through a pressurized process. Once the solids and the liquid are separate, the solution left has approximately 83% recovered water. The leftover concentrate is disposed through deep well injection.¹⁴³ The plant serves East El Paso and is located next to the Critical Materials Corporation which recovers minerals in the wastewater discharged from the plant.¹⁴⁴

Upon opening in 2007, the plant was able to produce 27.5 MGD. In 2020, El Paso Water underwent a feasibility study to expand the plant capacity. Ultimately, the plant will reach an additional 100,000 customers by expanding to 42 MGD. The first phase of expansion began in 2021.¹⁴⁵

Water used in sea water desalination has more than 10,000 TDS and is typically greater than 35,000 TDS. Because of the high salinity, seawater desalination requires a lot of energy to push the water through the membranes under high pressure.¹⁴⁶ The costs associated with a seawater desalination plant are higher and estimated between \$2.50 to \$3.00 per 1,000 gallons or more.¹⁴⁷

¹³⁸ "Desalination," Texas Water Development Board, <https://www.twdb.texas.gov/innovativewater/desal/faq.asp#title-01>.

¹³⁹ *Id.*

¹⁴⁰ "Brackish FAQs," Texas Water Development Board, <https://www.twdb.texas.gov/innovativewater/desal/faqbrackish.asp>.

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ "Kay Bailey Hutchinson WTP," El Paso Water, <https://www.epwater.org/cms/one.aspx?portalId=6843488&pageId=7422402>.

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ "Seawater FAQs," Texas Water Development Board, <https://www.twdb.texas.gov/innovativewater/desal/faqseawater.asp>.

¹⁴⁷ *Id.*

The process from permit to construction for a seawater desalination plant can be more labor intensive than a brackish plant due to the higher salt content. Leftover concentrate from the plant can be injected through a disposal well or discharged into the ocean.¹⁴⁸

There are currently no operational seawater desalination plants in Texas but there are several throughout the United States. California has ten, of which only six are active. The state has plans for nine more along the coast. The largest plant in the country is in Carlsbad, California and produces 50 MGD. The second largest in Tampa Bay, Florida produces 25 MGD.¹⁴⁹

Recently, the TCEQ approved the permit for the first seawater desalination plant in the state. The process has taken several years beginning with the receipt of the permit from the Port of Corpus Christi (the Port) in March 2018.¹⁵⁰ In July 2018, the notice of receipt of permit was released and the comment period began. The next month, the draft permit was developed and mailed.¹⁵¹ The public meeting over the permit was held in April 2019 and the comment period ended. In November 2019, the hearing request for the permit was considered in a Commission meeting. The Commissioners referred nine issues and 30 affected persons to the State Office of Administrative Hearings (SOAH) for consideration.¹⁵² In May 2021, the Commission considered a proposal for decision on the permit but remanded it back to SOAH.¹⁵³

The Environmental Protection Agency (EPA) sent notice to TCEQ rescinding the waiver of review for the permit for the Port. The EPA requested documents related to the permit's initial submission. TCEQ sent the requested documents to the EPA. Two months later, TCEQ sent notice to the EPA of their agreement that the Port permit was classified as a minor permit and therefore under the jurisdiction of TCEQ. In December 2021, the EPA responded with an interim objection and request for more information. The agency also asserted that the permit should have been designated as a major permit.¹⁵⁴ In March of 2022, the EPA sent another letter stating, "if the TCEQ were to issue [the permit] without responding to EPA's Interim Objection...then it would not be a validly issued final NPDES permit."¹⁵⁵ That same month, the SOAH hearing occurred. In September 2022, the EPA once again sent notice to TCEQ that "if the TCEQ issues [the permit] without responding to EPA's Interim Objection...then it would not be a validly issued final NPDES permit."¹⁵⁶ That same month, the TCEQ considered the Proposal for Decision on the permit and the Commissioners voted to adopt the draft revised permit as modified.¹⁵⁷ As of today, the TCEQ has not received new orders from EPA.

¹⁴⁸ "Seawater FAQs," Texas Water Development Board, <https://www.twdb.texas.gov/innovativewater/desal/faqseawater.asp>.

¹⁴⁹ *Id.*

¹⁵⁰ Email from Ferrell Fields, Government Relations Director, Texas Commission on Environmental Quality, September 28, 2022 (on file with the author).

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ *Id.*

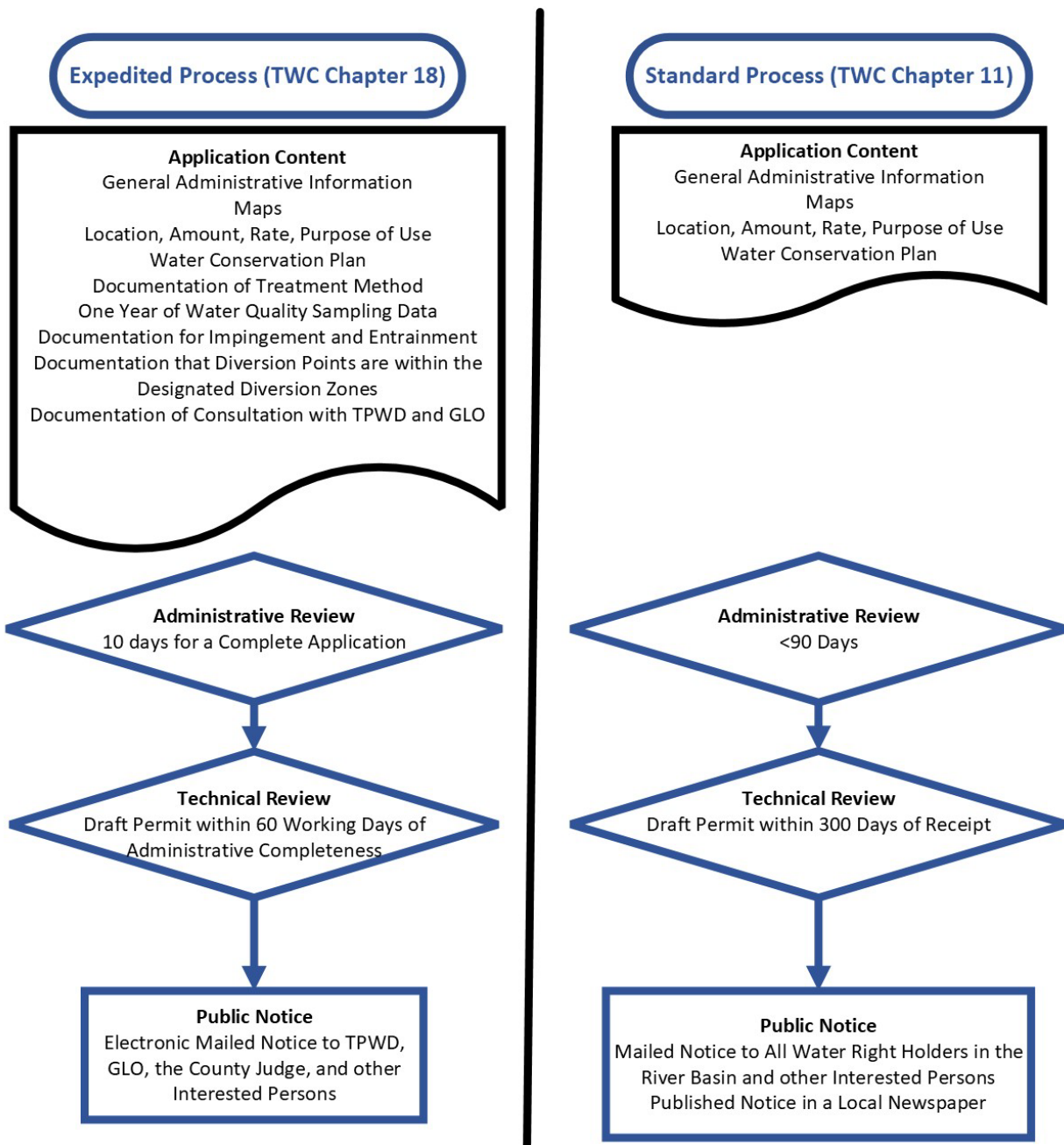
¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

There are two permit processes for desalination plants: expedited process or the standard process. The expedited process under the Texas Water Code. The steps with TCEQ are depicted in the following chart.

Desalination Plant Permit Process at TCEQ



Information provided by Texas Commission on Environmental Quality, October 24, 2022.

As of October 2022, TCEQ has issued 73 wastewater permits for desalination facilities in the last 22 years.¹⁵⁸ Currently, there are 12 pending applications under review, seven of them are for new facilities. Of the seven, four are new seawater desalination facilities and three are brackish water desalination facilities.¹⁵⁹

Committee Testimony on Interim Charge #2

The TWDB has initiated state water planning since the 1950s and switched to a ground-up approach beginning in the 1990s.¹⁶⁰ Regional planning has produced more credible plans each year with more data and participation.¹⁶¹ Plans are based on the drought of record, or the conditions in the state when drought was at its peak. There are 3,000 water strategies in six categories of use. The Regional Water Planning Groups compare demands with existing supply and decide where more or new supply is needed.¹⁶²

Based on population and demand calculations, TWDB estimates that the state will be short 6.9 million acre feet per year by 2070 in a drought of record. The 2022 SWP has strategies that if implemented, would create 7.7 million acre feet per year by 2070. The plan relies heavily on water conservation strategies.¹⁶³ It would cost \$80 billion to implement every strategy in the plan.¹⁶⁴

Twenty-three new reservoirs in the plan would create 866,000 acre feet in supply by 2070. The reservoirs are estimated to cost \$12 billion and another \$9.3 billion for delivery infrastructure.¹⁶⁵ These costs and estimations were completed in mid-2020. According to the TWDB, it takes 20 years for a reservoir to come to fruition.¹⁶⁶

¹⁵⁸ Email communication from Ferrell Fields, Director Government Relations, Texas Commission on Environmental Quality (on file with the author).

¹⁵⁹ *Id.*

¹⁶⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Temple McKinnon) Texas Water Development Board.

¹⁶¹ *Id.*

¹⁶² *Id.*

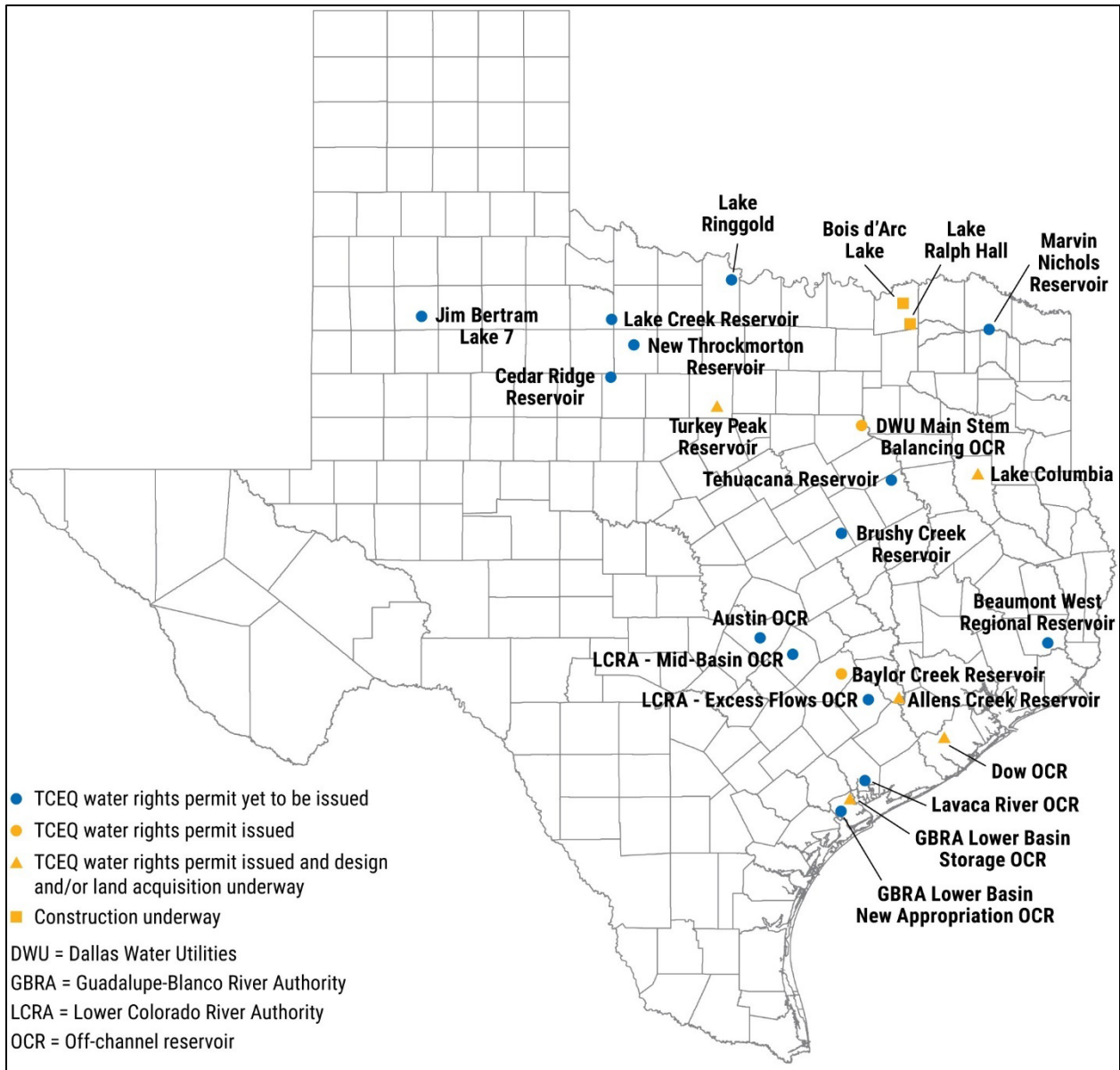
¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

Map of Proposed Reservoirs in the 2022 State Water Plan



Map provided by Texas Water Development Board.

There are 39 groundwater desalination projects in the SWP. The plants are projected to add 157,000 acre feet per year of supply and cost \$2.9 billion.¹⁶⁷ This is the first cycle of planning where the Regional Water Planning Groups had to justify if they did not recommend brackish desalination as a water supply strategy. Nine of the groups recommended the strategy. Reasons

¹⁶⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Temple McKinnon) Texas Water Development Board.

given for not recommending include costs to build, availability of supply, and qualified operators in rural areas to run the plants.¹⁶⁸

There are also seawater desalination plants included in the SWP. The costs for these projects are \$2.8 billion. The top reasons for not including them in a regional plan were cost and delivery distance.¹⁶⁹

Aquifer Storage & Recovery (ASR) projects are only feasible in certain areas of the state.¹⁷⁰ Ten regions in the SWP recommended 27 projects for either ASR systems or pilot projects. The strategy would create 193,000 acre feet per year by 2070 and cost \$17 billion if implemented.¹⁷¹

The plan accounts for a 30% demand reduction in water needs through agriculture conservation. There are multiple approaches to create a more efficient use of water including dryland farming. The Regional Water Planning Groups make the recommendations of which best management practices to use in their regional plans.¹⁷²

Water permitting at the TCEQ varies from simple to very complicated.¹⁷³ New water supply reservoirs are considered some of the most complex of all water permits.¹⁷⁴

There are five phases to permitting with the TCEQ for new water supply reservoirs. First, the agency conducts pre-application meetings which typically begin 1-2 years before the application is turned in.¹⁷⁵ The second phase is the administrative review. At the end of this phase, the application is declared administratively complete, and a priority date is assigned. The priority date refers to an applicant's place in line, or seniority, of their water right.¹⁷⁶

The technical review is the third phase of the process. During this review, TCEQ examines the applicants' water conservation plan, environmental review, drought plan, water availability models, and accounting tied to the permit.¹⁷⁷ The second and third phases can take 2-3 years. In comparison, simple water rights permits take around 77 days.¹⁷⁸

The fourth phase is the public participation process. The draft notice is published as a public notice. According to TCEQ, new water supply reservoirs typically have a lot of public interest and requests for a contested case. TCEQ will hold a public meeting and respond to all comments the agency receives.¹⁷⁹

¹⁶⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Temple McKinnon) Texas Water Development Board.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Kim Nygren) Texas Commission on Environmental Quality.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

The final phase of the process is the contest case and Commission decision period.¹⁸⁰ The agency will set the permit on an agenda to be heard by the TCEQ Commissioners. They will determine if the requesters of a contested case are affected parties. If so, the permit application will be referred to the State Office of Administrative Hearings (SOAH).¹⁸¹ SOAH will hear the case and send decision recommendations to the TCEQ Commissioners. The Commission makes the final determination based on the feedback.¹⁸²

Public participation phase can take over a year to complete and the contest case phase takes at least a year but typically more.¹⁸³

Of the 23 new water supply reservoirs in the SWP, ten have been permitted, four are pending permits, and the remaining nine have not approached the agency to begin the process.¹⁸⁴

There is a federal permitting process in many cases as well. This is separate from the permitting at TCEQ. Some applicants choose to run the permitting processes concurrently.¹⁸⁵ Most of the water flows in waterways in the state are already accounted for and new water supply reservoir permits transfer existing rights.¹⁸⁶

The TCEQ permits water desalination projects in the state based on the wastewater. Desalination process involves two buckets of water: the product water and the reject water. There are 53 municipal desalination facilities in the state producing 157 million gallons per day.¹⁸⁷

Texas does not have a seawater desalination plant currently. There are permits in process, but the challenges are higher costs, concerns from the public, and environmental impact.¹⁸⁸ The wastewater permitting for desalination plants includes an administrative review, public input, and technical review. There are currently ten desalination wastewater permits underway and four more for marine desalination.¹⁸⁹

The Federal government has also undertaken the process to create a new definition for the Waters of the United States (WOTUS). The definition establishes Federal jurisdiction which could impact how states administer permits and the rights of landowners over water.¹⁹⁰ The issue began in April 2020 when a final rule was published, then remanded to the court system, and vacated. The EPA and USACE have been operating under pre-2015 WOTUS rules but in December 2021, published a new proposed definition. The process runs in two steps with an intent to revise WOTUS.¹⁹¹

¹⁸⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Kim Nygren) Texas Commission on Environmental Quality.

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Robert Sadlier) Texas Commission on Environmental Quality.

¹⁸⁸ *Id.*

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

Texas Water Infrastructure Network (TXWIN) is a member driven organization founded by industry representatives who build water infrastructure in the state. Perry Fowler, Executive Director, explained that the market has created a challenging time for water infrastructure construction projects. Inflation and costs volatility are creating big demands on project sponsors.¹⁹²

In 2021, the projects awarded under stable conditions began to see supply chain disruptions to materials like steel, diesel, pvc, and more. These items also were priced 20-100% higher.¹⁹³ Budget estimates from two years ago are no longer considered valid.¹⁹⁴

A lot of project managers are setting aside reserve funds and pre-purchasing equipment and supplies.¹⁹⁵ Projects have also been delayed with the hope that costs would go down, which they have not.¹⁹⁶

There are also concerns over the IIA domestic sourcing requirements as well. Many parts in more complex water treatment plants or water supply facilities require circuit boards and other modular products that are manufactured outside of the United States.¹⁹⁷ Projects will need waivers to be able to complete the complex designs. There are also labor requirements in the IIA that are in direct contrast to Texas law, such as only using organized labor.¹⁹⁸ According to Mr. Fowler, the more arbitrary conditions you put on funding options, the more difficult the execution will be.¹⁹⁹

Kyle Frazier with the Texas Desal Association explained that Texas is facing extreme drought in many parts of the state. With little fundamental change to the water supply landscape since 2011, there is a need for adequate, long-range planning to combat the effects of drought.²⁰⁰ There are 23 reservoirs in the State Water Plan to be built in the next 50 years. However, in the last 30 years, there has only been one. In order to implement the reservoirs in the plan, Texas would need a new reservoir every 2 years.²⁰¹

Desalination creates an infinite resource at a cost-effective rate for the volume of water. However, the strategy is only 4% of all strategies in the SWP and it must be increased.²⁰² Inland brackish desalination plants have been successful in the state and marine is a consideration. Texas has the opportunity to have the third seawater desalination plant in the country.²⁰³

There are common misconceptions that the costs of seawater desalination facilities are unattainable. Rates are calculated by the cost of water sources in a portfolio so that actual cost of

¹⁹² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Perry Fowler) Texas Water Infrastructure Network.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Kyle Frazier) Texas Desal Association.

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.*

the project is spread over the entire service area. There needs to be better public information. As an example, Brownsville and the region around it together built and paid for their desalination plant. The costs are spread over several user groups.²⁰⁴

Neil Deeds with INTERA, an engineering firm, testified about Aquifer Storage & Recovery (ASR) projects. There are main reasons to do an ASR project: drought resistance or load balance.²⁰⁵ Drought resistance is where you "bank" water in an aquifer for several years to use in case of low water supply during a drought. As an example, San Antonio Water Supply (SAWS) added an ASR project to their water portfolio due to their current water supply permits have reduction clauses in case of low supply. By 2011, SAWS had stored 100,000 acre feet and begin utilizing the source once their permits were reduced due to drought.²⁰⁶

Load balance is when a water utility stores excess water supply in the winter for use in the summer.²⁰⁷ Typically water supply needs are twice in the summer what they are in the winter.²⁰⁸

Texas water utilities are facing increased growth and less water supply. New Braunfels Utility (NBU) watched the growth in their area multiply rapidly. They commissioned an ASR study in 2020 with a pilot well in a brackish area of the Edwards Aquifer. As of now, the monitoring of the well is promising, and the permits are moving forward.²⁰⁹

While ASR is not a management strategy everywhere, it is a tool that can be employed in high growth areas.²¹⁰

Richard Whiting with 7Seas testified on the company's public/private partnership with the City of Alice for a desalination project. 7Seas is a global water supply company that builds water and wastewater treatment plants for municipal use.²¹¹ Alice utilized financing through the TWDB for portions of the project and 7Seas brought capital for construction, permitting, and risk for the desalination plant.²¹² At the end of the contract term between 7Seas and Alice, the city will take over the operation and maintenance of the plant and became its outright owner. The contract term is 15 years with 7Seas in exchange for a long-term water purchase agreement.²¹³

Mr. Whiting explained that 7Seas operates with strict preventative maintenance. The project's overall price is lower than what it would cost to purchase, transport, and treat raw water by the City of Alice. The company has fifteen seawater desalination plants across the world.²¹⁴

²⁰⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Kyle Frazier) Texas Desal Association.

²⁰⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Neil Deeds) INTERA.

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ *Id.*

²⁰⁹ *Id.*

²¹⁰ *Id.*

²¹¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Richard Whiting) 7Seas.

²¹² *Id.*

²¹³ *Id.*

²¹⁴ *Id.*

Michael Esparza with the City of Alice testified on the city's single source of water, Lake Corpus Christi and how expensive it is to purchase the raw water, transport, treat, and distribute.²¹⁵ The city has been using the source since the 1950s. During the 2011 drought, Alice began looking for an uninterrupted source of water due to surface water declines.²¹⁶ They settled on the Jasper brackish aquifer, but the project stalled once the drought waned. Several years later, the city picked the project back up and began working with TWDB in 2018. Alice issued a request for proposal, received bids from several companies, and chose 7Seas.²¹⁷

There are three main factors why the city chose a public/private partnership for the desalination facility. The pairing allowed the city to avoid heavy risks related to never owning or operating a desalination plant. The price was lower with a private company as compared to overhead costs with a city. The initial financial burden fell on 7Seas.²¹⁸

With 18,000 residents in the City of Alice, the current cost to treat the raw water is \$3.85-4.05 per thousand and \$1.11 per thousand to purchase.²¹⁹ The desalination plant will cut that cost in half.²²⁰

Sheriff Jeff Lyde of Clay County testified against the building of new water supply reservoir Lake Ringgold. According to Sheriff Lyde, the citizens of the county rejected the project and believe the project is not needed. Additionally, public safety resources, stretched thin by patrol of Lake Arrowhead, will now be expected of Sheriff Lyde's office with no assistance from the City of Wichita Falls who is the owner of the project.²²¹

Judge Mike Campbell, County Judge for Clay County, testified against building Lake Ringgold. Judge Campbell explained that the lake should be removed from the State Water Plan, and it does not meet the requirements to be in the plan of the risk verses the costs. The population in the area has not increased but has decreased. In addition, there will be forty families forced to sell 40,000 acres of land.²²²

John DeGomez testified about concerns regarding the Vista Ridge project in Lee County. The well on his property has seen a negative impact on available water. The well has drooped 33 feet total since the project began.²²³

²¹⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Michael Esparza) City of Corpus Christi.

²¹⁶ *Id.*

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.*

²²¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Sheriff Jeff Lyde) Clay County.

²²² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Judge Mike Campbell) Clay County.

²²³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from John DeGomez) public testimony.

William Rhodes testified that according to his calculations his well will go dry for good in 30 months. His well has been remediated by the groundwater conservation district already once. Several wells in the area have gone dry due to the Vista Ridge project.²²⁴

Andrew Wier, Executive Director of Simsboro Aquifer Water Defense Fund (SAWDF), testified that they support the innovative strategies in the SWP to avoid the use of groundwater. Mr. Wier is concerned that the SWP strategies require large amounts of water to be pumped from the Carrizo-Wilcox that would be transferred far from the people living above the water.²²⁵

According to Mr. Wier, the Vista Ridge project pumping totals 50,000 acre feet, 15,000 from the Carrizo-Wilcox Aquifer and remainder from Simsboro Aquifer.²²⁶ In the groundwater availability model (GAM), the groundwater management area used the first 6 months of pumping to predict the impact. The GAM is following the impacts in the Simsboro Aquifer which has fewer wells that are impacted. The impact to the Carrizo-Wilcox Aquifer is much worse.²²⁷

Mr. Wier testified that the SWP focuses on the large municipalities that need large amounts of water as opposed to the rural areas which will lose the water.²²⁸ There is an expected \$1 billion negative economic impact due to the drawdown.²²⁹

Deborah Clark from Clay County testified against the building of Lake Ringgold. Ms. Clark said that the citizens of Clay County are against the lake as they have been left out of the discussions surrounding the project. Ms. Clark's ranch will split in two by the reservoir. Livelihoods will be threatened, and the lake is not needed per the population.²³⁰

Don Hardy testified that his wells in Lee County are losing their water.²³¹ Mr. Hardy also explained that the community that is losing their water wants to know where the water is going.²³²

Nancy McKee testified that she is facing aggressive drawdowns in the Carrizo-Wilcox.²³³ Since April 2020, the water level at Ms. McKee's well has dropped 80 feet and she has lowered her pump 100 feet. Ms. McKee said over 20 neighbors on her road are facing the same. There have been over 200 water well failures and \$400,000 has been paid mitigation costs.²³⁴

²²⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from William Rhodes) public testimony.

²²⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Andrew Wier) Simsboro Aquifer Water Defense Fund.

²²⁶ *Id.*

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Deborah Clark) public testimony.

²³¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Don Hardy) public testimony.

²³² *Id.*

²³³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Nancy McKee) public testimony.

²³⁴ *Id.*

Steven Walden with the American Water Works Association testified about the need for infrastructure and supply for small systems. "In a short amount of time and giving up very little can help those with 100 connections."²³⁵ Barriers to regionalization also need to be examined. As an example, Lubbock has 21 small water systems around the city but doesn't join us with them because they are private systems"²³⁶ Stated Walden.

James Lee Murphy with the America First Committee PAC testified in favor of desalination facilities. He explained it is a proven technology used around the globe for the last 50 years. It's expensive but so is any new water supply resource.²³⁷

Lauren Ice Umhaill Valley Ranch testified on the behalf of a local ranch owner against the Lake Ringgold reservoir project. There is a concern about the inundation acres which are currently local ranching and farming.²³⁸

Alan Pyle with Water Fleet testified about their technology to clean water through a mobile water treatment system.²³⁹ The company wants to use their technology that is on a declared boil water notice.²⁴⁰

Kermit Heaton testified against the Vista Ridge project. He believes we need to use water where it is located instead of transferring it.²⁴¹

Recommendations

Texas should continue to participate and lead the nation in robust State Water Planning. However, the plan must be realistic. TWDB should implement feasibility surveys of the projects in the plan in order to push strategies that have attainable completion dates. Working with the Regional Water Planning Groups, TWDB should remove projects from the plan and work with the groups to replace them with other strategies.

It's time for Texas to get serious about securing future water supply for generations to come. There is an opportunity to employ innovative water technology strategies combined with new water supply with bold investment.

The committee recommends investing in new water supply development. The goal of investment would be to reach 6 million acre feet of new water projects in the works in ten years. Texas has the opportunity to invest in water rights from neighboring states and build the infrastructure to transport the water, laying other critical infrastructure at the same time such as broadband. Large

²³⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Steven Walden) American Water Works Association.

²³⁶ *Id.*

²³⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from James Lee Murphy) America First Committee PAC.

²³⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Lauren Ice) Umhaill Valley Ranch.

²³⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Alan Pyle) Water Fleet.

²⁴⁰ *Id.*

²⁴¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 10, 2022 (testimony from Kermit Heaton) public testimony.

scale marine and brackish desalination plans produced water treatment plants, and other projects that create a *new* water source would be considered eligible. Projects must certify the large acre feet of potential supply with applications based on the amount produced and ability to reach different regions of the state. In specific cases, research into innovative water technologies that the TWDB deemed plausible would be eligible.

Then initial investment would go towards loans with some eligible for principal forgiveness depending on the population served. The long-term planning would be to create an evergreen concept where the fund can sustain itself.

With bold ideas and concepts, Texas can plan itself out of a water shortage.

Interim Charge #3

Evaluate the status and effectiveness of the State's groundwater management process, including data used to support regional water planning and conservation goals. Report on the effectiveness of the State's groundwater protection efforts and whether statutory changes are needed to protect groundwater quality.

Committee Hearing Information

The Committee held a hearing on November 16, 2022, to hear testimony from invited stakeholders and the public on groundwater in Texas.

Invited testimony from the following persons:

- Andrew Wier, Executive Director, Simsboro Aquifer Water Defense Fund [SAWDF], Landowner, Well Owner, Retired from state service
- Nancy McKee, Landowner, Well Owner, Rancher
- Mike Orosco, Landowner, Well Owner, Rancher
- Natalie Ballew Director, Groundwater Division, Water Science & Conservation, Texas Water Development Board
- Leah Martinsson, Executive Director, Texas Alliance of Groundwater Districts
- Gary Westbrook, General Manager, Post Oak Savannah GCD
- Alan Day, General Manager, Brazos Valley GCD

Groundwater Management

There are ninety-seven groundwater conservation districts (GCDs) in 173 counties in Texas. GCDs are created by the Texas Legislature or through the Texas Commission on Environmental Quality (TCEQ) through the Priority Groundwater Management Area (PGMA) process.²⁴² GCDs are confirmed by election except in the case of a Priority Groundwater Management Area (PGMA), and often have elected boards.²⁴³ According to the TWDB, of the average 6.95 million acre feet of groundwater used each year, 90% is managed through GCDs.²⁴⁴

The most common way for GCD creation is through legislative action.²⁴⁵ In a typical legislative session, the Texas Legislature creates one to three GCDs.²⁴⁶ Another way in which a GCD is created is through the PGMA process at TCEQ. The agency is tasked with studying an area in collaboration with Texas Water Development Board (TDWB) and Texas Parks and Wildlife Department (TPWD) to determine if there is a need for groundwater management in the area.²⁴⁷

²⁴² Texas Water Development Board, "Groundwater Conservation District Facts," http://www.twdb.texas.gov/groundwater/conservation_districts/facts.asp.

²⁴³ *Id.*

²⁴⁴ Texas Water Development Board, "Groundwater Conservation District and Groundwater Management Plan FAQ," <http://www.twdb.texas.gov/groundwater/faq/index.asp>.

²⁴⁵ Tex. Const. art. 16, § 59.

²⁴⁶ Texas Water Development Board, "Groundwater Conservation District Facts," http://www.twdb.texas.gov/groundwater/conservation_districts/facts.asp.

²⁴⁷ Texas Commission on Environmental Quality, "Priority Groundwater Management Areas," <https://www.tceq.texas.gov/groundwater/groundwater-planning-assessment/pgma.html>.

TWDB collaborates to maintain a wide swath of groundwater data for use by GCDs, the public, and other officials. One such data set is the Groundwater Availability Models (GAMs). The process includes "developing and using computer programs to estimate future trends in the amount of water available in an aquifer based on hydrogeological principles, actual aquifer measurements, and stakeholder guidance."²⁴⁸ The models are critical to future planning and desired future conditions (DFC) development by GCDs, planning by regional state water planning groups, and other stakeholders. GCDs are required to use modeling to manage their resources.²⁴⁹

TWDB groups the GAM models in two ways. First, they can be simulated and run based on a district's Groundwater Management Area (GMA). Often some areas may look like they have a high rate of recharge but in fact cover a large amount of space and therefore appear to have higher recharge.²⁵⁰

All GCDs are required to submit a Groundwater Management Plan to the TWDB. The plan explains a district's goals to manage their aquifer and contain several statutorily required goals:²⁵¹

- providing the most efficient use of groundwater.
- controlling and preventing waste of groundwater.
- controlling and preventing subsidence.
- addressing conjunctive surface water management issues.
- addressing natural resources issues that impact the use and availability of groundwater, and which are impacted using groundwater.
- addressing drought conditions.
- addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, and brush control, where appropriate and cost-effective; and
- addressing the desired future conditions established pursuant to the Texas Water code.

GCDs are regionalized through the 16 Groundwater Management Areas (GMAs) located across the state.²⁵² The Texas Water Development Board (TWDB) assists the GMAs with their groundwater management. The TWDB works with the GMAs by providing technical assistance through the Groundwater Availability Models and other means.

The GMAs also participate in the adoption of Desired Future Conditions (DFCs) which refer to the "quantified condition of groundwater resources... within a management area at one or more specified times."²⁵³ The DFCs assist GCDs in planning, permitting, and creating rules for

²⁴⁸ Texas Water Development Board, "Groundwater Models,"

<http://www.twdb.texas.gov/groundwater/models/index.asp>.

²⁴⁹ *Id.*

²⁵⁰ Texas Water Development Board, "Summary of Groundwater Recharge in Groundwater Conservation Districts and Major/Minor Aquifers in Texas," August 2020.

²⁵¹ Texas Water Code §36.1071 - §36.1073; 31 Texas Administrative Code 356.10, 356.51-356.54

²⁵² Texas Water Development Board, "Groundwater Management Areas,"

http://www.twdb.texas.gov/groundwater/management_areas/index.asp.

²⁵³ Tex. Admin. Code, Title 31, Part 10 §356.10.

groundwater usage in their area. They also protect the aquifer resources beneath the ground for future use.

To adopt a DFC, GCDs must consider the following nine factors²⁵⁴:

- Aquifer uses/conditions
- Water supply needs/strategies in the State Water Plan
- Hydrological conditions
- Environmental impacts
- Subsidence
- Socioeconomic impacts
- Private property rights
- Feasibility of achieving
- Other²⁵⁵

The districts within their GMAs must consider all factors when developing their DFC.

Committee Testimony on Interim Charge #3

Mike Orosco testified on the effects of wholesale water pumping from the aquifers beneath is land. His well is facing a 2.5 feet per month reduction and in 14 months, Mr. Orosco will need to drill a new well costing \$50,000.²⁵⁶ Many others in the community are experiencing similar scenarios. Mr. Orosco believes that private landowners should not underwrite the cost for large companies to export water.²⁵⁷ The companies should bear the costs of mitigation and compensation.²⁵⁸ Additionally, groundwater conservation districts should have proper rule making to protect local groundwater access.²⁵⁹

Nancy McKee testified as a landowner. There have been reports that San Antonio Water System is losing 16 billion gallons per year due to water loss in their infrastructure.²⁶⁰ This is the same as 20% of the Vista Ridge project export capacity.²⁶¹ Ms. McKee believes that the water system should not get to accept Vista Ridge water when there is loss in their own system.²⁶²

Groundwater Conservation Districts were not given proper authority or protection from large wholesale water transfers without the threat of litigation.²⁶³ Additionally, scientific models like

²⁵⁴ Tex. Water Code Title 2 §36.108(d)

²⁵⁵ *Id.*

²⁵⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Mike Orosco).

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Nancy McKee).

²⁶¹ *Id.*

²⁶² *Id.*

²⁶³ *Id.*

the groundwater availability models and the desired future conditions are flawed because the data does not align with what is happening on the ground.²⁶⁴

Andrew Weir testified on behalf of the Simsboro Aquifer Defense Fund about the effects on landowners over the aquifer. According to Mr. Weir, there is a well that has been producing for 50 years that in less than 2 years from the first impacts from the Vista Ridge project coming online will need remediation.²⁶⁵ The Texas landowners facing these effects believe the joint planning process needs improvement.²⁶⁶

Rural landowners depend on domestic and livestock wells because there is no water supply system in their region.²⁶⁷ Current estimates put close to a half a million domestic and livestock wells in the state which are exempt from consideration of new or amended permits with groundwater conservation districts. These wells represent \$3.7 billion in capital investment to landowners and \$100 million in property value.²⁶⁸ Landowners like the well owners in the state generated \$24 billion in economic impact to the state of Texas.²⁶⁹

Mr. Weir testified that they have learned that the science relied upon is sometimes wrong. Domestic and livestock wells were not considered in the permitting process for the Vista Ridge project to supply water to San Antonio.²⁷⁰ Additionally, the desired future conditions process requires a groundwater conservation district to consider the socioeconomic impacts when generating the estimates. These figures do not often represent the impact to the rural source community.²⁷¹

The Simsboro Aquifer Defense Fund estimated 461 wells would be impacted by the Vista Ridge project. Post Oak Savannah Groundwater Conservation District now estimates that 2,338 wells will be eligible for mediation. Brazos Valley Groundwater Conservation District is now looking at impacts on wells in their area due to a recently approved large export permit.²⁷²

The Texas Water Development Board (TWDB) testified on the agency involvement in groundwater management. There are 98 groundwater conservation districts locally managed in nine major aquifers and 22 minor aquifers.²⁷³ The districts are grouped into 16 groundwater management areas (GMA) bound by aquifer boundaries. The GMAs meet at least annually and

²⁶⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Nancy McKee).

²⁶⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Andrew Weir) Simsboro Aquifer Defense Fund.

²⁶⁶ *Id.*

²⁶⁷ *Id.*

²⁶⁸ *Id.*

²⁶⁹ *Id.*

²⁷⁰ *Id.*

²⁷¹ *Id.*

²⁷² *Id.*

²⁷³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Natalie Ballew) Texas Water Development Board.

adopt desired future conditions every five years.²⁷⁴ The conditions are based on policy decisions combined with science.²⁷⁵

The agency also provides technical support to the GMAs. TWDB collects and sends out data about the overall condition of the aquifers, estimates productivity, and collects data from monitoring wells.²⁷⁶

Leah Martinsson with the Texas Alliance for Groundwater Districts (TAGD) testified on the organization's involvement in groundwater management. A subcommittee recently looked at the large-scale export permits. Impacts to the export are driven by aquifer conditions, rates, permitting rules, and well proximity.²⁷⁷ Groundwater conservation districts look to the best available science when determining approval of an export permit. Improvements to the groundwater availability models could help assessments along with the development of predictive tools.²⁷⁸

Chapter 36 of the Water Code discusses what districts can do when approving a transfer permit. They cannot adopt rules that would prohibit the transfer, but they can collect fees.²⁷⁹ The fees could be a negotiated amount with the user, a tax rate per \$100 charge per 1,000 gallons, or a 50% surcharge on the exported water.²⁸⁰ Some districts have a fee that is tied to the retail water rates in the area. Most portions of the Water Code related to fees have not been updated since 2011.²⁸¹

While Chapter 36 in the Water Code does not refer explicitly to mitigation as an alternative when limiting a permit, there are ways in which the statute mentions it.²⁸² When reviewing an export permit, a district shall consider the availability of water in the district and that of where it is going, the effect the transfer would have on the districts, and if the project is approved in the regional water plan.²⁸³

Alan Day with the Brazos Valley Groundwater Conservation District testified about water management and exports in the district. He believes groundwater planning starts at the GMA level and the desired future conditions.²⁸⁴ Within the law, if a person requests a permit to pump groundwater and can show they legally have a right to the water, the districts must grant the permit.²⁸⁵ Unfortunately, they have more permitted water than pumped groundwater.²⁸⁶

²⁷⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Natalie Ballew) Texas Water Development Board.

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Leah Martinsson) Texas Alliance for Groundwater Districts.

²⁷⁸ *Id.*

²⁷⁹ *Id.*

²⁸⁰ *Id.*

²⁸¹ *Id.*

²⁸² *Id.*

²⁸³ *Id.*

²⁸⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Alan Day) Brazos Valley Groundwater Conservation District.

²⁸⁵ *Id.*

²⁸⁶ *Id.*

The district has a robust monitoring system to check aquifer level and quality.²⁸⁷

The statutory requirement of the groundwater districts is to protect the integrity of the aquifer while preserving private property rights. In the Brazos Valley Groundwater Conservation District, a permit was recently approved for 50,000 acre feet per year to be moved outside of the district.²⁸⁸ The permittee knew they would have some effects from the pumping and export and they wanted to work with the district.²⁸⁹ The district required the permittee to pay 50% of the of the estimated costs of the mitigation over the course of the 13 permits.²⁹⁰ The permittee is pre-funding \$7.5 million two and a half years before they begin to pump at least 10,000 acre feet per year.²⁹¹

The district has identified 300-350 wells that may or may not face mitigation from the permit. These wells are put under monitoring through community engagement and outreach.²⁹² The monitoring will establish a baseline to be able to compare levels and pressure in the aquifer.²⁹³

The district is trying to follow a Texas Railroad Commission model of mineral operations. When a mining operation lowers, damages, or dries up a water well, they must cover the cost to fix it. In the beginning to permit the operation, they must show proof of being able to cover that cost. The district is aiming to follow a similar model.²⁹⁴

As of today, there have been some interaction with the Vista Ridge project. Some wells are seeing issues with their pressure at 20 feet into the aquifer.²⁹⁵ The district has also a curtailment rule where once the aquifer monitoring reaches 90% of the desired future conditions, the permits can be cut off and hold at their current pumping levels.²⁹⁶

Gary Westbrook testified about the Post Oak Savannah Groundwater Conservation District. The district was created due to water management gaps in the area. At the time of creation, there was 35,000 acres of property leased for water rights and transferred outside the district.²⁹⁷

The district has taken steps to be proactive about large water export permits. They have switched from a ten-day notice for new or amended permits to a 30-day notice.²⁹⁸ Pumping numbers from Vista Ridge have also been included in their joint planning process.²⁹⁹ There have been no curtailments as of today.

²⁸⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Alan Day) Brazos Valley Groundwater Conservation District.

²⁸⁸ *Id.*

²⁸⁹ *Id.*

²⁹⁰ *Id.*

²⁹¹ *Id.*

²⁹² *Id.*

²⁹³ *Id.*

²⁹⁴ *Id.*

²⁹⁵ *Id.*

²⁹⁶ *Id.*

²⁹⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Gary Westbrook) Post Oak Savannah Groundwater Conservation District.

²⁹⁸ *Id.*

²⁹⁹ *Id.*

Recently, the district finalized their compliance report. Those with wells over the Carrizo aquifer will most likely go to a threshold in the next three years but the Simsboro aquifer is no close.³⁰⁰ The impacts near the Vista Ridge project well field are due to a reduction in pressure, not a loss of water.³⁰¹

Mr. Westbrook explained the way the aquifer responds with pressure reduction due to water pumping. The aquifer is still full, but the problem lies with the location of the pumps and the down dipping dynamics of the aquifer.³⁰² In most of the down dipping aquifers, reducing pumping can have pressure recovery. Post Oak Savannah Groundwater Conservation District has a robust well monitoring system.³⁰³

The district adopted the well assistance program.³⁰⁴ There is a monthly report to their board in order to keep all the information transparent and open to the public.³⁰⁵ They have identified 2,000 wells that would be eligible for well assistance but not necessarily that would be affected. They will continue to address these over the next ten years. They fund the well assistance program with fees collected on permits.³⁰⁶

Schuyler White testified about the quality of groundwater in West Texas.³⁰⁷ Mr. White expressed frustration with wells which have begun polluting the land from old oil and gas wells.³⁰⁸ Senator Perry expressed that the agencies are working together and so are the members of the Legislature to find a solution to the issue.

Carlos Rubenstein testified on recommendations for districts including to re-enforce the DFC process and fund science at TWDB.³⁰⁹ Additionally, the Legislature should enable the TWDB to do a technical review on their DFC process.³¹⁰

Vanessa Puig-Williams with Environmental Defense Fund testified on export permits and large scale in-district groundwater pumping. While there are impacts to the wells present there is also impacts to streams and rivers.³¹¹ TWDB's annual budget is just over \$1 million for groundwater modeling in the state. EDF believes the agency needs more funding to better assist the districts.³¹²

³⁰⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Gary Westbrook) Post Oak Savannah Groundwater Conservation District.

³⁰¹ *Id.*

³⁰² *Id.*

³⁰³ *Id.*

³⁰⁴ *Id.*

³⁰⁵ *Id.*

³⁰⁶ *Id.*

³⁰⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Schuyler White) public testimony.

³⁰⁸ *Id.*

³⁰⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Carlos Rubenstein) public testimony.

³¹⁰ *Id.*

³¹¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Vanessa Puig-Williams) Environmental Defense Fund.

³¹² *Id.*

Scott Courtney testified that he did not believe there was adequate evidence that the water export permits are exact science.³¹³ The impacts to the property owners' wells are perceived.³¹⁴ Senator Perry disagree with Mr. Courtney's assessment due to the science and monitoring from districts and landowners who testified earlier in the hearing.³¹⁵

Judge Paul E. Fischer of Lee County testified that the county is seeing the effects of one water marketer in their area.³¹⁶ They have permits with Lost Pines that could severely impact the property owners in the county.³¹⁷

Kayla Schnell testified on the growth in Lee County. Currently, 23 new wells are under construction for a new water treatment plant which will deliver water to Williamson County.³¹⁸

Sheila Hemphill testified that various consultants have indicated standards required but the Environmental Protection Agency are not based on science.³¹⁹

Recommendations

Groundwater planning and regulation in the state remains a locally driven process. However, that does not mean that the state cannot have a role in assisting the groundwater conservation districts.

The committee recommends appropriating funding to the Texas Water Development Board (TWDB) to robustly update the groundwater availability models. The agency has not recovered funding from cuts made in 2011. Without the ability to acquire the best available science, the local groundwater districts that rely on the data cannot accurately estimate their desired future conditions. Additionally, the state should consider funding grants to groundwater conservation districts or management areas to provide locally driven needs and groundwater assessments.

Testimony at the November 16, 2022, Committee hearing described the circumstances surrounding water export permits and the effect on landowner wells. Groundwater conservation districts must use all tools available to mitigate unintended negative impacts from large amounts of groundwater pumping. Fees or contracts for exports can be constructed in a way in which mitigation activities can be funded.

Agriculture conservation grants are a good tool for producers. The committee recommends replenishing the funding at the TWDB to continue the program.

³¹³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Scott Courtney) public testimony.

³¹⁴ *Id.*

³¹⁵ *Id.*

³¹⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Judge Paul E. Fischer, Lee County) County Judge, public testimony.

³¹⁷ *Id.*

³¹⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Kayla Schnell) public testimony.

³¹⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony from Sheila Hemphill) public testimony.

We must continue to be good stewards of our groundwater resources. This means utilizing conservation measures as often as possible. Meters on wells to monitor the aquifer are a great tool that require outreach and education so that property owners understand the potential benefits.

Finally, water conservation awareness begins at an early age. Wherever possible, we should continue to education and outreach to all Texans on the importance of our water supply.

Interim Charge #4

Study and make recommendations on rural small business development and workforce needs. Consider and recommend innovative methods for business development in rural parts of the state.

Committee Hearing Information

The Committee held a hearing on May 11, 2022, to hear testimony from invited stakeholders and the public on rural employment in Texas.

Invited testimony from the following persons:

- Bryan Daniel, Chairman, Texas Workforce Commission
- Tim Kleinschmidt, General Counsel, Texas Department of Agriculture
- Martin Luna, Math Teacher, P-Tech
- Ashlynn Messer, Senior High School Student and FFA President at Coronado High School in Lubbock, TX
- Connor McKinzie, Graduate Student at Texas Tech University and former FFA 1st Vice President
- Justin Jaworski, Executive Director, Cisco Development Corporation
- Nichol Everingham, Director, Texas Rural Water Association
- Chloe Coniaris, Advantage Capital
- Lynn Kelly, Stonehedge Capital

Background

Texas Workforce Commission (TWC) tracks employment data in the state. Since 2012, employment has grown over the rural counties in Texas, those outside of the 25 metropolitan areas, by 2.5%.³²⁰ The most growth was in the professional and business services sector at 23.3% followed by leisure and hospitality at 19.1%.³²¹

Some industries have seen a decline. The natural resources and mining industry fell by 14.5%, information services down by 6.7% and education and health services were down by 2.6%.³²²

Following the COVID-19 pandemic, six industries recovered to levels seen prior: manufacturing; trade, transportation, and utilities; information; professional and business services; leisure and hospitality; and government.³²³

Generally, over the last ten years, the median unemployment rate in rural counties has decreased.³²⁴

³²⁰ "Employment and Unemployment Data in Rural Counties and Boards," Texas Workforce Commission, November 14, 2022 (on file with the author).

³²¹ *Id.*

³²² *Id.*

³²³ *Id.*

³²⁴ *Id.*

Committee Testimony on Interim Charge #4

According to the Texas Workforce Commission (TWC), the first five months of 2022 were record setting for job creation in the state, as businesses reopened, and people returned to the workforce post-COVID shutdown. The previous record was set in February 2020.³²⁵ There are currently 13.2 million payroll jobs in the state. The service industry sector is still trying to grow to pre-COVID numbers. From a jobs and recovery point of view, there were more jobs in the first three months of 2022 than there have been since the TWC started keeping records.³²⁶ Of the 600,000 open jobs listed on Work in Texas, only 1% are classified as remote work.³²⁷

56% of the population live in twenty counties in the state and 87% are located along Interstates 35, 45, and 10.³²⁸ Jobs in rural Texas have different characteristics than in the urban centers. There are also certain infrastructure needs in rural Texas right now: healthcare, transportation, and childcare.³²⁹ Often employers choose a rural area, but the infrastructure needs make finding workers impossible.³³⁰ The big picture for the state is the advancement of telecommunications, especially in rural Texas.³³¹

There has been slow rural job growth since 2011 at 2.1% compared to 25% statewide.³³² The TWC Workforce Boards scattered throughout Texas engage employers directly. Additionally, the agency pursues upskilling and training with local education providers.³³³

The TWC is also increasing their own footprint across the state. The agency has put call centers and individual specialties such as attorneys or IT workers in remote work settings. The goal is to get Texas taxpayers more workforce at TWC with little increase in cost.³³⁴

The most difficult jobs to fill in rural Texas are considered middle skills jobs that require some training but may not need a college degree. These jobs are about 60% of the total open positions in the state.³³⁵ Specifically, healthcare related positions and nurses are in need. These positions are difficult because often nurses are trained and the move to urban areas for better salaries and flexible work hours. However, Lubbock, along with Wichita Falls, El Paso, and Abilene have been working on a regional model to a system that keeps workers in the area.³³⁶

As an example, Grayson County has a medical center. The center has partnered with the local community college to create a system where you can get a Bachelor of Science in nursing at the

³²⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Chairman Brian Daniel) Texas Workforce Commission.

³²⁶ *Id.*

³²⁷ *Id.*

³²⁸ *Id.*

³²⁹ *Id.*

³³⁰ *Id.*

³³¹ *Id.*

³³² *Id.*

³³³ *Id.*

³³⁴ *Id.*

³³⁵ *Id.*

³³⁶ *Id.*

college and begin work at the center. While employed, TWC assists with additional upskill training to help the nurses stay in the area while advancing their careers.³³⁷

Nurses have led the list of most needed positions in the state for seven years.³³⁸

TWC has seen two things work best to keep workers in a rural area: training and upskilling. The agency worked to help companies get out ahead of hiring rather than only hiring in a deficit.³³⁹

Around 57% of the counties in the state lost population. Additionally, the current workforce is aging out of their positions. There is a concern that the acquired skills the vacating workers will not translate to incoming workers leaving a gap.³⁴⁰ Another example is in Amarillo and Lubbock among the food manufacturing industry. These groups have partnered with the local school districts to create tracks to employment locally keeping workers in the community.³⁴¹

Over the last ten years, companies have not necessarily relocated their entire workforce to Texas. They choose Texas because they want to use the workforce in existence. Because of this, there is constant pressure on the workforce.³⁴²

Texas Department of Agriculture (TDA) testified on economic development in rural Texas. The agency oversees \$375 million in Community Development Block Grants (CDBG).³⁴³ The funds go toward small population counties and are focused on infrastructure, improvement to revitalize communities, and other rural related issues. So far in 2022, TDA has administered \$70 million in federal funds and \$10 million in state funds.³⁴⁴

The agency is creating a new rural economic development program to begin later in 2022 that will administer grants up to \$1 million per project. The plan will be that the program is more flexible and easier for rural communities to apply.³⁴⁵

The Rural Business Fund grant's goal is job creation. Every project must create twenty-five full-time jobs. The fund has \$10 million in recycled funding TDA can use but is running out.³⁴⁶

The Texas Agriculture Finance Authority funds loans for the agricultural industry and economic development and could reach more than \$200 million in the next four years. There are two programs under the finance authority. The rural community loan program which focuses on job

³³⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Chairman Brian Daniel) Texas Workforce Commission.

³³⁸ *Id.*

³³⁹ *Id.*

³⁴⁰ *Id.*

³⁴¹ *Id.*

³⁴² *Id.*

³⁴³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Tim Kleinschmidt) Texas Department of Agriculture.

³⁴⁴ *Id.*

³⁴⁵ *Id.*

³⁴⁶ *Id.*

creation, housing, and healthcare. The second program is agriculture community development loans for those in the industry.³⁴⁷

TDA also focuses on rural healthcare. There is approximately \$2.5-3 million available in rural healthcare work programs and approximately 160 hospitals.

Going forward, TDA is actively working to be proactive in outreach for new projects and workforce development. Currently, the agency employs 10-12 staff members who travel the state full-time advertising the CDBG program to communities.³⁴⁸

Ashlynn Messer with the Corondo FFA Chapter - Lubbock testified about the benefits of FFA. The organization teaches leadership and personal growth. It connects students with agriculture lifestyle in the past and present.³⁴⁹ According to Ms. Messer, when joining a food science program in school, the next opportunity was to participate in the State FFA contest. Ms. Messer plans to Major in Food Science at Texas Tech University this fall and remain in the community connected with food manufacturing.³⁵⁰ Lubbock ISD will also begin construction of their district-wide agriculture center. FFA helps students learn to give back and pursue new opportunities.³⁵¹

Martin Luna with Roscoe Collegiate ISD - P-Tech testified on his experience with a rural dual credit program. The program began in 8th grade where there was an original introduction to the program. The goal was to find a career verses a job and how higher education can help.³⁵² Once in high school, the focus turned to dual credit courses with the goal to graduate with an Associate Degree. Following graduation, Mr. Luna took advantage of a one year expedited program at Texas Tech University to receive a teaching degree. As of today, Mr. Luna is back in Roscoe ISD as a Geometry teacher.³⁵³

Conner McKinzie testified as a former Texas FFA Officer. The core of FFA centers around a three-circle model: classroom, outside experience, and FFA. Good teaching leads to good experience and then success in FFA which re-enforces what is taught.³⁵⁴ FFA is district based in high school, with a state and national component. The organization opens the door for leadership opportunities and the ability to apply the experience in real life.³⁵⁵

The Cisco Economic Development Corporation serves Cisco, located between Dallas and Abilene. The rural area has been rediscovered but the same problems that existed 30 years ago, still exist

³⁴⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Tim Kleinschmidt) Texas Department of Agriculture.

³⁴⁸ *Id.*

³⁴⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Ashlynn Messer) Corondo FFA Chapter - Lubbock.

³⁵⁰ *Id.*

³⁵¹ *Id.*

³⁵² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Martin Luna) Roscoe Collegiate ISD - P-Tech.

³⁵³ *Id.*

³⁵⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Conner McKinzie) former Texas FFA Officer.

³⁵⁵ *Id.*

today: workforce, infrastructure, and connectivity.³⁵⁶ The Type A and B economic development sales tax tools have served as the best vehicle to use local money and control as an incentive for businesses. The taxes give the communities education and training opportunities. These tools are important for the rural areas to chart their own course without bureaucratic oversight.³⁵⁷

Connectivity between the state and local programs is sometimes a problem.³⁵⁸ As an example, information on federal programs administered by the state like the CDBG funds doesn't make it to the local level. Also, small business development centers are in communities of 100,000 or more, leading some to travel through two counties to meet with a representative. While the TWC Workforce Boards do well in rural Texas, they are spread out regionally and require travel.³⁵⁹

The most recent example of the City of Cisco partnering with a large company and using local tax dollars came from the new \$10 million travel center project located on Interstate 20. The center will employ 60 employees. The project required an agreement between all three local economic development groups utilizing a rebate for the infrastructure improvement.³⁶⁰

Advantage Capital testified on their experience as an investment firm in debt and equity financing for small businesses underserved by traditional capital. In Texas, less than 1% of all venture capital is invested outside Austin, Dallas-Ft. Worth, and Houston.³⁶¹ Around 60% of all venture capital in the state for the first quarter of 2022 has been in Austin. Texas rural businesses make up a quarter of all businesses in the state. The issue is the scale of investment. Most businesses are looking for over \$100 million in funding, but rural businesses often need \$1-5 million total.³⁶² Between October 2020 and September 2021, 247 bank or thrift banks closed in Texas with most of those in rural communities.³⁶³

Capital is available, the direction just needs to shift towards rural Texas.³⁶⁴ Many states are utilizing partnerships with the private sector to access capital. They are tapping into federally licensed sources such as small business investment companies to prioritize targeted financing into rural businesses.³⁶⁵

There are two states in the country, Utah and Ohio, that have renewed their state participation in the partnership. Pennsylvania is currently looking to expand the program which brings in strong job numbers and on-going investment opportunities.³⁶⁶ In Ohio, for every dollar of investment,

³⁵⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Justin Jaworski) Cisco Economic Development Corporation.

³⁵⁷ *Id.*

³⁵⁸ *Id.*

³⁵⁹ *Id.*

³⁶⁰ *Id.*

³⁶¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Chloe Coniaris) Advantage Capital.

³⁶² *Id.*

³⁶³ *Id.*

³⁶⁴ *Id.*

³⁶⁵ *Id.*

³⁶⁶ *Id.*

there is a \$2.61 return.³⁶⁷ There are ways in which to set the boundaries where the companies who invest are ones that have experience investing in rural counties previously.³⁶⁸

As an example, in Utah, the World Jobs Act Program created an opportunity for Advantage Capital to invest in ACT Aerospace in rural Utah. The company couldn't access senior bank loans they needed to expand. Through a \$2 million investment, the company was able to meet the requirements of the loan, fulfill on the job training, and a facility expansion for 80 employees.³⁶⁹

Advantage Capital utilizes debt and equity financing that be provided under the programs. The company has stipulations that they cannot take most of the business. They also work with the business to create the best debt financing package.³⁷⁰

Lynn Kelly with Stonehedge Capital testified on Texas based investments focused on underserved communities. More than \$100 million has been invested by the company in the state. Non-metro counties maintain higher rates of self-employed individuals than urban counties.³⁷¹

Approximately 92% of Stonehedge Capital investments have been made in urban counties. The company recognizes there needs to be a shift. In the absence of an economic development incentive, investors won't focus on an area without infrastructure and basic needs met.³⁷²

In previous sessions, the Texas Legislature has considered legislation to use a state insurance premium tax credit to increase the flow of investment.³⁷³ As an example, Nevada has initiated this program which allowed Stonehedge to finance a rural healthcare facility at below market rates and flexible terms. The facility built an ambulatory center which assisted residents who before would drive over 80 miles for assistance.³⁷⁴ The project also created jobs at a rate above county wages.³⁷⁵

The Texas Rural Water Association (TRWA) provides training and other services to members. Water and wastewater facilities are struggling to find employees and keep them.³⁷⁶ It takes 38,000 trained professionals to provide safe drinking water in Texas and 30-50% are expected to retire in the next decade.³⁷⁷

In 2017, TRWA began the path to a certified apprenticeship program with the first group beginning in June 2022. The program consists of 288 hours of technical instruction and 4,000 hours on the job training over two years. The goal is to attract newcomers to the industry and generate

³⁶⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Chloe Coniaris) Advantage Capital.

³⁶⁸ *Id.*

³⁶⁹ *Id.*

³⁷⁰ *Id.*

³⁷¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Lynn Kelly) Stonehedge Capital.

³⁷² *Id.*

³⁷³ *Id.*

³⁷⁴ *Id.*

³⁷⁵ *Id.*

³⁷⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Nichol Everingham) Texas Rural Water Association.

³⁷⁷ *Id.*

awareness. The accelerated pace graduate workers with a D, C, and CSI license with eligibility to sit for the B license test, the second highest licensing level for water and wastewater in the state.³⁷⁸

There are eight participating employers with six apprentices enrolled. TRWA is also working on approval by the Veterans Board. The program is funded by grants from Texas Department of Agriculture and the United State Department of Agriculture.³⁷⁹ There is also Workforce Innovation and Opportunity Act (WIOA) funding available, however, the parameters of the program are locally driven and can be difficult to navigate.³⁸⁰ The fee to participate is \$4,000 and TRWA is actively working to drive that cost down.³⁸¹

Susan Hays testified that infrastructure is important to rural economic development. Healthcare is vital to keeping the communities going. Agriculture industry also needs help with retirements and labor shortages.³⁸²

Renzo Soto testified on behalf of Texas 2036 about the Tri-Agency initiative between Texas Education Agency, Texas Higher Education Coordinating Board, and Texas Workforce Commission. Texas 2036 believes the state needs to fully implement the goals of the Tri-Agency initiative.³⁸³ As of today, 0.2% of state funding to community colleges is geared towards local workforce needs which makes it more difficult to respond to rural communities.³⁸⁴

Steven Golla with the Texas Veterinary Medical Association testified on the shortage of veterinarians in the state. Clinics and schools have been working to recruit new veterinarians and technicians in rural areas.³⁸⁵ It is difficult due to the large land space between clinics and the need for the veterinarians to travel the distances.³⁸⁶

Recommendations

Industry in rural Texas continues to drive the state's economy whether it's oil & gas, agriculture, healthcare, infrastructure, or travel. For the state to succeed, Texas must continue to invest in job creation and development in rural communities.

First, we must focus on the industries where workforce is dwindling. Our state's water and wastewater plants will face 30-50% of the workforce leaving their field of expertise in the next ten years. Programs like the Texas Rural Water Association's apprenticeship program will encourage workers to train in an accelerated program to enter the workforce ahead of their competition.

³⁷⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Nichol Everingham) Texas Rural Water Association.

³⁷⁹ *Id.*

³⁸⁰ *Id.*

³⁸¹ *Id.*

³⁸² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Susan Hays) public testimony.

³⁸³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Renzo Soto) Texas 2036.

³⁸⁴ *Id.*

³⁸⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Steven Golla) Texas Veterinary Medical Association.

³⁸⁶ *Id.*

The committee recommends legislation to temporarily suspend the education requirement of a high school diploma or GED as a prerequisite for obtaining Class D water or wastewater operator license in Texas. If a high school student has successfully completed prerequisite Texas Commission on Environmental Quality training coursework and a passing score on the applicable licensing exam to receive a Class D license, they could receive a provisional license to begin work under a direct supervision of a licensed professional. Once the individual graduated or earned their GED, the license would become official. This program would represent other operators in training programs in the state.

The committee also recommends the development of the state premium insurance tax credit to encourage investment in rural businesses. Approximately 19,449 businesses would be eligible for the program as of October 2022.

Investment in rural Texas doesn't end with job training and dollars. In fact, it begins with our schools. In rural communities, organizations such as FFA and programs such as the Roscoe ISD career and education program must be encouraged. Access to the global economy thru technology is critical to retain and recruit youth in rural Texas. All efforts to reliable and quality broadband must be encouraged. Sustainable partnering with industry and federal funding must be a priority of the 88th legislative session.

Compulsory education beyond 16 must become a conversation as to what that is in order to meet the challenges of tomorrows' workforce. Specialty trades, technology jobs, and the support of industries involved in training programs with students whose passions and skill already align for the careers of tomorrow at 16 needs to become an option.

FFA and other agricultural curricula should be expanded, specifically to all children in public schools to give awareness how food supply meets food demand.

In agrarian areas, public schools and local partnerships should be encouraged to "own the strength" of the community and region. Lubbock Independent School District is currently building out an agricultural stem facility that will capitalize on a dwindling workforce and one that is critical to society's national interests as well basic survival.³⁸⁷ The opportunity to capitalize on a community's strengths and values cannot be overlooked. The hands-on workforce of tomorrow is alive and well in rural Texas where expectations of hard work and independence are still the norm. A wrench, tire, or gps on a tractor are not foreign items or concepts to the kid growing up in rural areas. It's time for Texas to "Carpe' Diem" in our lesson plans and not underestimate the teachings of the past that still exist in rural communities of today. They can do anything because they are not waiting on someone to do it for them.

³⁸⁷ "Digging a partnership: Lubbock ISD, Texas Tech leaders break ground on AgriSTEM Complex," Lubbock Avalanche Journal, March 22, 2022.

Interim Charge #5

Examine and report on how permanently maintaining daylight savings time impacts the agricultural community.

Committee Hearing Information

The Committee did not host a hearing on the charge. Information related to the charge is below.

Recommendations

Daylight savings time remains a federal issue. Until the states are given the authority by Congress to make changes, Texas only has one option, which is to observe permanent standard time the entire year. There is legislation pending at the federal level which would grant states the ability to observe daylight savings time year-round.

Interim Charge #6

Consider the Federal government's open border policies and practices of releasing illegal immigrants in rural areas of the state. Report on the impact to rural Texas, and their local ability to address social, health, and law enforcement needs.

Committee Hearing Information

The Committee held a hearing on May 11, 2022, to hear testimony from invited stakeholders and the public on rural immigration in Texas.

Invited testimony from the following persons:

- Steve McCraw, Director and Colonel, Department of Public Safety
- Tim Kleinschmidt, General Counsel, Texas Department of Agriculture
- Office of the Attorney General
- Susan Kibbe, Executive Director, South Texans' Property Right Association
- Roy Boyd, Sheriff's Association, Goliad County
- Urbino "Benny" Martinez, Sheriff, Brooks County

Background

According to the Texas Department of Transportation, Texas and Mexico share 1,254 miles of border connected by 28 international bridges and border crossings.³⁸⁸ The United State Customs and Border Protection (CBP) became official on March 1, 2013, to maintain "the integrity of the nation's boundaries and ports of entry."³⁸⁹ Before consolidation into the CBP, several agencies were tasked with oversight on the border. The following were included in the consolidation: customs service; immigration inspectors; agriculture inspectors; border patrol agents; air and marine monitoring; and international trade.³⁹⁰ The top priority of the CBP is to "keep terrorists and their weapons" out of the U.S. while allowing travelers and commerce.³⁹¹

The CBP tracks two different types of encounters on the border: Title 8 and Title 42. A Title 8 encounter is when migrants are detained in the U.S. briefly.³⁹² Under Title 42, migrants are expelled to their home country. The rule was invoked by the Center for Disease Control for the COVID-19 pandemic.³⁹³

³⁸⁸ "Texas-Mexico Border Crossings," Texas Department of Transportation, <https://www.txdot.gov/content/txdotreimagine/us/en/home/projects/projects-studies/statewide/texas-mexico-border-crossings.html#:~:text=Texas%20and%20Mexico%20share%201%2C254,commercial%2C%20vehicular%20and%20pedestrian%20traffic>.

³⁸⁹ "CBP Through the Years," U.S. Customs and Border Protection, <https://www.cbp.gov/about/history>.

³⁹⁰ *Id.*

³⁹¹ "Border Security," U.S. Customs and Border Protection, <https://www.cbp.gov/border-security>.

³⁹² "Key facts about Title 42, the pandemic policy that has reshaped immigration enforcement at U.S.-Mexico border," Pew Research Center, John Gramlich, April 27, 2022.

³⁹³ *Id.*

According to the CBP, so far in fiscal year 2022, the CBP has had 2,206,436 encounters total. 1,152,352 were Title 8 and 1,054,084 were Title 42.³⁹⁴ The table below depicts encounters by field office in Texas.

U.S. Customs and Border Patrol Encounters by Field Office

Location	Number of Encounters
El Paso	307,844
Big Bend	31,948
Del Rio	480,931
Laredo	106,843
Rio Grande Valley	468,124
Total	1,395,690

Information from U.S. Custom and Border Patrol & Office of Field Operations Year End Reporting for FY22, Data is current as of 10/14/2022.

Total encounters along the entire southern border are up 33% in FY 2022 compared to this time in 2021.³⁹⁵ Both El Paso (58.7%) and Del Rio (85.5%) have had increases in the state. Big Bend (14.3%), Laredo (4.8%), and Rio Grande Valley (14.7%) have all decreased in reported encounters.³⁹⁶

The CBP also tracks some drug seizure information for the southern border. So far in 2022, marijuana (155,000 lbs.), khat (175,000 lbs.), and methamphetamine (175,000 lbs.) lead for most seized by weight.³⁹⁷ Total drug seizures top 656,000 lbs.³⁹⁸

On March 6, 2021, Texas Governor Greg Abbott launched Operation Lone Star (OLS) as a joint operation between the Texas Department of Public Safety and the Texas National Guard to enhance safety along the Texas border with Mexico.³⁹⁹ The goal of the operation is to deploy air, ground, marine, and border assets to vulnerable areas to stop the flow of smugglers moving drugs and people.⁴⁰⁰

OLS tracks apprehensions and drugs moving into the state. According to the operation, there have been over 1.16 million apprehensions in calendar year 2022 so far.⁴⁰¹ There have been 192 stash houses discovered and 2,233 migrants referred to CBP by OLS.⁴⁰² In the two processing facilities located in Val Verde and Jim Hogg Counties, 5,355 migrants have been processed and there are currently 830 subjects in custody.⁴⁰³

³⁹⁴ U.S. Custom and Border Patrol & Office of Field Operations Year End Reporting for FY22, Data is current as of October 14, 2022.

³⁹⁵ *Id.*

³⁹⁶ *Id.*

³⁹⁷ *Id.*

³⁹⁸ *Id.*

³⁹⁹ "Governor Abbott, DPS Launch "Operation Lone Star" To Address Crisis at Southern Border," Office of the Texas Governor, March 6, 2022.

⁴⁰⁰ *Id.*

⁴⁰¹ Operation Lone Star Dashboard as of October 20, 2022, sent via email from the Texas Department of Public Safety.

⁴⁰² *Id.*

⁴⁰³ *Id.*

The operation closely tracks the amount and type of drugs seized during apprehensions. The table below depicts drug seizure totals.

Drug Seizures by Operation Lone Star in lbs.

Gulf of Mexico, South Texas, & West Texas		Statewide	
Marijuana	21,967	Marijuana	42,157
Cocaine	3,553	Cocaine	5,624
Meth	11,060	Meth	36,653
Heroin	87	Heroin	381
Fentanyl	307	Fentanyl	1,529

Information from Operation Lone Star Dashboard as of October 20, 2022, sent via email from the Texas Department of Public Safety.

Based on the amount of fentanyl seized, OLS estimates the statewide total equals 346,782,740 lethal doses.⁴⁰⁴ Additionally, \$38,935,490 in currency has been seized and 5,921 firearms statewide.⁴⁰⁵

OLS tracks criminal arrests and the type. Along the Gulf of Mexico, South Texas, and West Texas, there have been 21,248 criminal arrests, 5,418 criminal trespass arrests, 18,757 arrested on felony charges, and 1,651 on federal or other charges.⁴⁰⁶ There have been 319,366 migrant apprehensions and referrals and 28,567 illegal entries deferred.⁴⁰⁷ There have been 2,904 bailouts.⁴⁰⁸

On April 6, 2022, Governor Abbott directed the Texas Division of Emergency Management (TDEM) to begin voluntary transportation of migrants to cities outside of the state of Texas. To coordinate, mayors and county judges would notify TDEM of any migrants released from federal custody that may need transportation.⁴⁰⁹ According to TDEM, as of October 2022, over 12,900 have left the state on approximately 290 trips since the program began.⁴¹⁰

Committee Testimony on Interim Charge #6

Governor Abbot has provided additional state troopers to fill the gap on the border to address the continued influx of immigrants.⁴¹¹ In January 2021, the number of captured immigrants began to increase, particularly in our rural counties.⁴¹² Texas historically receives about sixty percent of these immigrants. Texas Department of Public Safety (DPS) employees are working overtime to address this problem at the points of entry.⁴¹³ Colonel Steve McCraw with DPS confirmed that currently there are approximately 600 vacant positions at DPS when there are normally only

⁴⁰⁴ Operation Lone Star Dashboard as of October 20, 2022, sent via email from the Texas Department of Public Safety.

⁴⁰⁵ *Id.*

⁴⁰⁶ *Id.*

⁴⁰⁷ *Id.*

⁴⁰⁸ *Id.*

⁴⁰⁹ Letter from Governor Greg Abbott to Chief Nim Kidd, April 6, 2022, https://gov.texas.gov/uploads/files/press/O-KiddW.Nim202204062216_.pdf.

⁴¹⁰ Communication from the Texas Division on Emergency Management.

⁴¹¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Steve McCraw, Director) Department of Public Safety.

⁴¹² *Id.*

⁴¹³ *Id.*

300.⁴¹⁴ The burden being placed on DPS employees by the problem of illegal immigration is driving many existing officers to retire early and causing others not to pursue this career.⁴¹⁵

Senator Perry asked what happens to an illegal immigrant captured by DPS and was told that such persons are turned over to the border patrol after being fingerprinted and investigated for any criminal history.⁴¹⁶ Persons DPS are unable to identify are referred to U.S. Immigration and Customs Enforcement.⁴¹⁷ The current plan between Texas and the federal government is to attempt to stop illegal entry, then process and move inward those who manage to enter.⁴¹⁸

According to Colonel McCraw, Texas needs to be more proactive on the front end. DPS said they cannot talk about migrants even though they have been identified as a threat.⁴¹⁹ Our federal partners are now solely responsible for vetting migrants to identify potential threats.⁴²⁰ Additionally, migrants have been educated on what to say in order to improve their likelihood of being granted asylum status.⁴²¹ Many are transported to bus stations and given a ticket to anywhere else to "pass the problem on to some other unsuspecting city or town".⁴²²

Landowners are having issues with trespassing. Governor Abbott has implemented trespassing as criminal violations in border communities.⁴²³ According to Colonel McCraw, there is no room in the jails to house these people.⁴²⁴ While the border patrol can do an expedited return for Mexican nationals, once back in Mexico they can simply return the next day.⁴²⁵ Senator Perry requested practical solutions to this problem that ensures our resources are used to gain control over this issue.⁴²⁶

Senator Perry discussed fentanyl transportation over the border and the additional burden on Texas schools caused by illegal immigration.⁴²⁷

Colonel McCraw believes the ports of entries have to be secured and is thankful for the help of the Texas National Guard to support the border to control areas.⁴²⁸ Texas National Guard has the jurisdiction to put security teams in place and make arrests.⁴²⁹ Department of Homeland Security will lose \$3.6 million if Title 42 goes away.⁴³⁰ McCraw related a story in which a tractor trailer

⁴¹⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Steve McCraw, Director) Department of Public Safety.

⁴¹⁵ *Id.*

⁴¹⁶ *Id.*

⁴¹⁷ *Id.*

⁴¹⁸ *Id.*

⁴¹⁹ *Id.*

⁴²⁰ *Id.*

⁴²¹ *Id.*

⁴²² *Id.*

⁴²³ *Id.*

⁴²⁴ *Id.*

⁴²⁵ *Id.*

⁴²⁶ *Id.*

⁴²⁷ *Id.*

⁴²⁸ *Id.*

⁴²⁹ *Id.*

⁴³⁰ *Id.*

was pulled over and over 60 people were inside with no cooling mechanism.⁴³¹ Some of the people had to be treated for dehydration and other medical needs and the remainder fled to parts unknown when the doors were opened.⁴³²

Texas Department of Agriculture (TDA) testified that the Department does not have specific data on the effects of increased illegal immigration on rural health systems.⁴³³ Rural hospitals will experience a negative impact from individual illegal immigrants seeking healthcare through hospitals as there will be little to no reimbursements.⁴³⁴ This will be negative to the hospital's bottom line.⁴³⁵

South Texans' Property Rights Association is based out of Brooks County.⁴³⁶ This association was formed in 2006 to address border security issues experienced by landowners in the county that houses the largest border patrol checkpoint in the nation.⁴³⁷ The issues the association addresses are: decline in county law enforcement, local EMS services, and relocation of residents.⁴³⁸ Since county law enforcement is busy responding to smuggling pursuits and the pursuit of individuals, the activities necessary to maintain normal local public safety and emergency medical services suffer.⁴³⁹ Lastly, the majority of ranching and farming families are moving due to trespassing and safety concerns caused by illegal immigrants.⁴⁴⁰

According to the Association, McAllen had serious issues of illegal immigrants being released into the local community roaming the streets and entering buildings for shelter.⁴⁴¹ In the Rio Grande Valley area, the federal government pays ten times more than the state for foster children's overnight care, which leaves Texas children vulnerable.⁴⁴² To date, 1-3% of illegal immigrants are hardened criminals which overwhelm local law enforcement in both rural and urban areas along the border.⁴⁴³

Immigration is the Office of the Attorney General's (OAG) number one priority.⁴⁴⁴ There have now been eleven lawsuits dealing with rural immigration.⁴⁴⁵ There is a lawsuit pending relating to

⁴³¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Steve McCraw, Director) Department of Public Safety.

⁴³² *Id.*

⁴³³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Tim Kleinschmidt, General Counsel, Texas Department of Agriculture).

⁴³⁴ *Id.*

⁴³⁵ *Id.*

⁴³⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Susan Kibbe, South Texans' Property Rights Association).

⁴³⁷ *Id.*

⁴³⁸ *Id.*

⁴³⁹ *Id.*

⁴⁴⁰ *Id.*

⁴⁴¹ *Id.*

⁴⁴² *Id.*

⁴⁴³ *Id.*

⁴⁴⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Murtaza, Deputy Attorney General for Legal Counsel, Office of the Attorney General).

⁴⁴⁵ *Id.*

Title 42 because of the pandemic was affecting the border.⁴⁴⁶ Biden Administration plans to end the use of Title 42.⁴⁴⁷

The OAG also assists rural counties and law enforcement needs for ranching and farming families.⁴⁴⁸ Texans are afraid of what is happening and terrified of immigrants cutting down fences and trespassing to stay overnight on their property.⁴⁴⁹ The state's hands are tied on what can be done with rural immigration.⁴⁵⁰

According to the OAG, Federal administration is only incentivizing rural immigration and helping the cartel.⁴⁵¹ It is not improving border security.⁴⁵² The legal system has provided many avenues to help immigrants come to our country legally.⁴⁵³ However, in the current context illegal immigration is the main focus.⁴⁵⁴ There will be 18,000 illegal immigrants crossing the border daily.⁴⁵⁵

The OAG explained the different Federal VISA programs. H-2A is for temporary agricultural workers and H-2B is for non-agricultural workers.⁴⁵⁶ This allows a legal framework to bring in workers.⁴⁵⁷ The program list includes many countries such as Mexico whose nationals can apply to come to work.⁴⁵⁸ The process from start to finish takes 90 days for agricultural and 60-120 days for nonagricultural applications.⁴⁵⁹ The cost per person is \$650.⁴⁶⁰ This is a pathway for immigrants to come to work.⁴⁶¹ The program assists immigrants to come into the workforce in a legal way.⁴⁶²

According to Sheriff Roy Boyd, the Rio Grande Valley continues to lead the charge on border security.⁴⁶³ There are established partnerships with federal, state, and local law enforcement agencies to disrupt the illicit immigrants and narcotics entering in Texas.⁴⁶⁴ Currently, Goliad County is closely watching fourteen stash sites that are utilized by cartel members for storing illegal migrants, exchanging illegal migrants between traffickers, striping stolen vehicles, and

⁴⁴⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Murtaza, Deputy Attorney General for Legal Counsel, Office of the Attorney General).

⁴⁴⁷ *Id.*

⁴⁴⁸ *Id.*

⁴⁴⁹ *Id.*

⁴⁵⁰ *Id.*

⁴⁵¹ *Id.*

⁴⁵² *Id.*

⁴⁵³ *Id.*

⁴⁵⁴ *Id.*

⁴⁵⁵ *Id.*

⁴⁵⁶ *Id.*

⁴⁵⁷ *Id.*

⁴⁵⁸ *Id.*

⁴⁵⁹ *Id.*

⁴⁶⁰ *Id.*

⁴⁶¹ *Id.*

⁴⁶² *Id.*

⁴⁶³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Sheriff Roy Boyd, Sheriffs' Association of Texas, Goliad, Texas).

⁴⁶⁴ *Id.*

hiding traffickers, all during enhanced enforcement efforts.⁴⁶⁵ The result from the cartel activity is property owners not being able to enjoy their own ranches.⁴⁶⁶ Stash houses and bailout vehicles are being investigated by the Department of Homeland Security.⁴⁶⁷ The Goliad County Sheriff's Office has two deputies on duty at any given time.⁴⁶⁸ When there is a pursuit and bailout they are required to dedicate one hundred percent of resources to the resolution of the matter for extended periods of time which absorbs all resources available for emergency services personnel and equipment.⁴⁶⁹ During a typical bailout there will be twelve or more illegal migrants fleeing and the tracking dogs are sent to assist.⁴⁷⁰

Sheriff Boyd recommended that radios be updated to communicate with neighboring agencies as well as a secure app that can be verified for law enforcement use for voice or text communication across groups.⁴⁷¹ The efforts must be cooperative between local, state, and federal agencies to secure the borders and enforce the laws.⁴⁷²

Many Texas and Southwestern Cattle Raisers Association members living along the Texas-Mexico border and in South Texas. They are on the front lines of a dangerous and costly battle against illegal immigration.⁴⁷³ There are two main groups of immigrants crossing the southern border: persons who attempt to evade detection as they move north and those who immediately turn themselves in upon crossing.⁴⁷⁴ A person attempting to evade detection is the most likely to participate in criminal and trespassing violations.⁴⁷⁵ This could include cutting fences, stealing vehicles, or setting dangerous fires as distractions to evade capture.⁴⁷⁶ The burden falls on landowners to repair damages and law enforcement to address the influx of migrants utilizing public services in Texas.⁴⁷⁷

Sheriff Benny Martinez from Brooks County testified that they have a local-to-local collaboration with neighboring counties.⁴⁷⁸ Sheriffs who do more than they are allowed can receive disciplinary action that could hinder their ability to retain their peace officer's commission.⁴⁷⁹

Senator Perry stated that the federal government has handcuffed local law enforcement by forbidding them from enforcing violations. Senator Kolkhorst stated that the message being given

⁴⁶⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Sheriff Roy Boyd, Sheriffs' Association of Texas, Goliad, Texas).

⁴⁶⁶ *Id.*

⁴⁶⁷ *Id.*

⁴⁶⁸ *Id.*

⁴⁶⁹ *Id.*

⁴⁷⁰ *Id.*

⁴⁷¹ *Id.*

⁴⁷² *Id.*

⁴⁷³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Stephen Diebel, Second Vice President, Texas and Southwestern Cattle Raisers Association).

⁴⁷⁴ *Id.*

⁴⁷⁵ *Id.*

⁴⁷⁶ *Id.*

⁴⁷⁷ *Id.*

⁴⁷⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Sheriff Urbino "Benny" Martinez, Brooks County).

⁴⁷⁹ *Id.*

to potential illegal immigrants is that their illegal entry will not be punished. The effect is an open border with free range into the states. Senator Perry stated that Texas will spend four billion dollars plus an additional six billion dollars to fix this problem created by the Biden Administration.

John Graves stated that Dimmit Regional Hospital does not turn anyone away and treats everyone each person regardless of their citizenship which creates a burden for the hospital.⁴⁸⁰ Border Patrol has brought in 135 undocumented patients through their emergency room in the last year.⁴⁸¹ Prior to early 2021, Mr. Graves said they did not need a security team in the hospital but have four security officers being paid from the hospital's budget.⁴⁸²

Recommendations

Rural Texans, all Texans, and the country's citizens face many dangers related to border security. The real damage caused by those of criminal intent not caught will become more prevalent as time passes. The narrative that the criminal element is non-existent is the trojan horse of the country, that when realized by the citizens, only then will the open border policies of the current administration will be felt in a most horrific way.

For example, one central Texas school district has faced fentanyl infiltration in their school systems. Hays Consolidated Independent School District has confirmed four students' deaths as attributed to fentanyl.⁴⁸³ With fentanyl overdoses up over 50% in one year, the flow of drugs over the border must be stopped or our kids will continue to pay the price.⁴⁸⁴

From property damage to drugs in their communities, to strained resources in healthcare and law enforcement, the communities along the border and West Texas cannot sustain the number of crossings into the state.

The balance between those seeking opportunity providing solutions for the workforce challenges and stopping illegal immigration is an admirable and common-sense goals. Framework exists for success and only needs updating and resources to achieve the goal of an opportunity for all and enforcing the rule of law.

The committee recommends Texas encourage the Federal government to revisit the Visa system and their limits and quotas. Additionally, the system should take advantage of technological advancements to track those entering for work but not wishing to remain in a more regular, seasonal approach. By creative approaches with employer partnerships, supply and demand for workforce needs can be met. Economic sanctions and all other tools available should continue to be used to discourage illegal immigration.

⁴⁸⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (invited testimony from Sheriff Urbino "Benny" Martinez, Brooks County).

⁴⁸¹ *Id.*

⁴⁸² *Id.*

⁴⁸³ KSAT, "Fourth Hays CISD student dies from fentanyl overdose in 2 months," September 8, 2022.

⁴⁸⁴ *Id.*

Interim Charge #7

Study the need for additional meat packing facilities in Texas. Evaluate and report on the increased cost to Texas ranchers and revenue lost in the Texas economy when meatpacking facilities are utilized outside of Texas.

Committee Hearing Information

The Committee held a hearing on May 11, 2022, to hear testimony from invited stakeholders and the public on meat packing facilities in Texas.

Invited testimony from the following persons:

- Dr. Timothy Stevenson, Associate Commissioner of Consumer Protection, Texas Department of Health Services
- Justin Benavidez, Ph.D., Texas A&M AgriLife Research and Extension Center at Amarillo
- Dustin Dean, Texas and Southwestern Cattle Raisers Association
- Kevin Buse, Owner of Champion Feeders, Texas Cattle Feeders Association
- James O'Brien, Owner, J.J. O'Brien Ranch, Bee County Farm Bureau Member

Background

Beef processing system vulnerabilities and related cattle and beef price volatility became the subject of much debate in August 2019 due to a fire at the Tyson beef processing plant in Holcomb, KS, and again, with the COVID-19 pandemic in 2020 and 2021.⁴⁸⁵ The combined impacts of processing plant closures and reductions in processing capacity led to historic market volatility and price levels due to product shortages in food service and grocery stores.⁴⁸⁶ The opposite situation occurred for cattle producers when reduced harvest and processing capacity led to reduced demand for fed cattle, primarily caused by a limited workforce.⁴⁸⁷ This resulted in significant price declines for cattle feeders and cow calf producers and highlighted the fact that Texas ranks number one nationally in cattle feeding capacity but number three in beef processing capacity.⁴⁸⁸ This deficit between feeding and packing capacity is exacerbated by any disruption in the supply chain and negatively impacts cattle producers in Texas.⁴⁸⁹ An increase in beef processing capacity in Texas would increase resiliency of the beef supply chain and prevent market disruptions and losses for cattle producers in the future.⁴⁹⁰

Texas is not meeting the need for meat packing facilities. During the pandemic, Texas Department of State Health Services (DSHS) did not have the latitude for custom exemption to sell into commerce from the federal government. According to DSHS, if meat packing facilities grow, the department will need additional full-time employees.⁴⁹¹

⁴⁸⁵ Senate Committee on Water, Agriculture & Rural Affairs email correspondence with Agriculture Industry October 25, 2022.

⁴⁸⁶ *Id.*

⁴⁸⁷ *Id.*

⁴⁸⁸ *Id.*

⁴⁸⁹ *Id.*

⁴⁹⁰ *Id.*

⁴⁹¹ *Id.*

Committee Testimony on Interim Charge #7

Texas Cattle Feeders Association is an agricultural trade association representing 200 feed yards and 4,000 cattle raisers responsible for approximately 28% of the nation's fed beef population.⁴⁹² The final step in the production system for cattle before harvesting is feeding.⁴⁹³ Cattle typically enter the feed yard weighing seven to eight hundred pounds after a diet consisting of grass, wheat and hay. At the feed yard they are put on a higher energy diet of grains, roughage, distiller's grains, by-products of human food production, vitamins and minerals managed by a cattle nutritionist to optimize their growth and muscle development.⁴⁹⁴ The cattle are monitored closely until they reach approximately 1,400 pounds before being sold and transported to a packing plant for harvest.⁴⁹⁵

Since Texas ranks number three in feed cattle processing and number one in cattle feeding, cattle must leave the state to be harvested.⁴⁹⁶ Texas would therefore benefit economically by building new processing plants. The Hereford plant only harvests fed cattle on a part-time basis and the Plainview plant closed that was harvesting 4,000 head per day creating a shortage of processing capacity throughout the system.⁴⁹⁷ In addition to the shortage of processing capacity the industry is experiencing a decline in labor and retention.⁴⁹⁸ It is also determined that prior to the pandemic the average startup cost for a meat processing facility was roughly \$100,000 per hook.⁴⁹⁹ That translates to \$100 million in financing costs to build the infrastructure for a 1,000 head-per-day plant.⁵⁰⁰

While the United States Department of Agriculture Food Safety and Inspection Service regulates processors who produce products for sale outside of Texas via interstate commerce, Texas operates a Meat Safety Assurance Program that regulates processors who sell only within Texas. This program is partnered with the federal program that provides \$5.1 million per year, or 50% of the funding needed to operate the program.⁵⁰¹ Although, there are minimum federal standards that the state program must follow, processors are permitted a certain latitude from federal regulations with respect to products sold in Texas.⁵⁰² The federal standards require Texas to maintain "at least equal to" requirements in order to avoid being subjected to stricter federal standards.⁵⁰³ These federal requirements of additional inspection and testing would not be cost effective for smaller Texas processing plants operating under the Meat Safety Assurance Program.⁵⁰⁴ The minimum federal requirements require animal inspection to insure the animals are healthy, are processed in a

⁴⁹² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Kevin Buse, Owner and Operator, Champion Feeders).

⁴⁹³ *Id.*

⁴⁹⁴ *Id.*

⁴⁹⁵ *Id.*

⁴⁹⁶ *Id.*

⁴⁹⁷ *Id.*

⁴⁹⁸ *Id.*

⁴⁹⁹ *Id.*

⁵⁰⁰ *Id.*

⁵⁰¹ *Id.*

⁵⁰² *Id.*

⁵⁰³ *Id.*

⁵⁰⁴ *Id.*

humane and sanitary manner, contain no harmful ingredients, and are truthfully labeled.⁵⁰⁵ Additional requirements are determined by the volume and the type of protein processed.⁵⁰⁶

The following table depicts facilities Department State Health Services team inspects in Texas (where the product stays in Texas).⁵⁰⁷

Number of Cattle Harvest Establishments	59
Average Number of Harvest Days, per week, per establishment	3.2
Average Cattle Harvest, per day, per establishment	8.1
Total Cattle Harvest, per week	1,529.3

Information provided by the Department of State Health Services.

According to research conducted at Rabobank, the U.S. beef packing industry is below the demand of daily harvest capacity. The Texas High Plains meets the need to feed 3.2 million head of cattle at one time.⁵⁰⁸ In that region, on average, the feedlot industry fills and empties its yard 1.7 times each year, which translates to approximately 5 million finished calves in the Texas High Plains annually.⁵⁰⁹ The value of cattle harvest revenue in Texas averaged \$1.9 billion over the last five years, and \$3.1 billion over the last year.⁵¹⁰ The cost of converting a live calf to beef products averaged \$409 per head from 2017-2021, but over the last year, value added per calf averaged \$677 per head.⁵¹¹ This added value may have been attributable to wages for workers and fuel to operate the facilities.⁵¹²

The big question is how cattle leaving the state for harvest impact the Texas economy.⁵¹³ On the Texas High Plains, harvest capacity is like fed cattle production, therefore, it is a balance between cattle production and cattle harvest when state lines are crossed.⁵¹⁴ This means that some cattle that are fed in Kansas are harvested in Texas and the inverse happens to balance the value of inputs.⁵¹⁵

Another question commonly asked: does Texas need more meat packing capacity.⁵¹⁶ The answer is an unqualified, yes. Increasing processing capacity will increase the demand for fed cattle and feeder calves while lowering the cost of beef for consumers.⁵¹⁷ The cost to build, staff and operate

⁵⁰⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony from Kevin Buse, Owner and Operator, Champion Feeders).

⁵⁰⁶ *Id.*

⁵⁰⁷ Email correspondence with DSHS on October 24, 2022, with Jordan Hill, Director of Government Relations.

⁵⁰⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Justin Benavidez, Ph.D., Texas A&M AgriLife Extension).

⁵⁰⁹ *Id.*

⁵¹⁰ *Id.*

⁵¹¹ *Id.*

⁵¹² *Id.*

⁵¹³ *Id.*

⁵¹⁴ *Id.*

⁵¹⁵ *Id.*

⁵¹⁶ *Id.*

⁵¹⁷ *Id.*

a new facility in Texas will obviously require large expenditures and entail additional challenges.⁵¹⁸

Texas leads the nation in beef cattle and cattle on feed with the feeding industry being concentrated in the panhandle.⁵¹⁹ Nebraska, Kansas, Colorado, and Iowa have a high volume of cattle inventory and large packing facilities.⁵²⁰ Texas is leading the nation in the cattle and beef industry, but is not limited to cattle only fed in Texas.⁵²¹ A cattle producer will look at the economic benefit when picking their feed and packing facility.⁵²² One producer would chose Nebraska for a higher quality graded beef where another producer would pick Texas to maximize pounds of beef.⁵²³ The issue is not the feed or low volume of cattle, but the limited processing capacity.⁵²⁴ Limited processing capacity puts the cattle owners in an unfavorable position with respect to the price they can receive for their cattle. The United States Department of Agriculture granted \$150 million dollars in February 2022 to expand the Meat and Poultry Processing Expansion Program.⁵²⁵ This money will help increase overall capacity and will be used for construction, expansion and existing facilities.⁵²⁶ The monies will be awarded to small to medium-sized regional processors to access start-up capital through grants and guaranteed loans.⁵²⁷

The current cattle production cycle will lead to a decrease in cattle supplies for the next two to three years, resulting in a natural, though short-lived alignment between annual fed cattle production and processing capacity.⁵²⁸ However, cattle supplies will increase again in 2024 or 2025 and beyond, and the deficit will return if processing capacity is not increased.⁵²⁹ This will likely require construction of new plants since it does not appear that current processing plants will be to add enough capacity in Texas.⁵³⁰ New and modern plants that are designed, constructed, owned and operated by newly formed entities will also provide additional competitive marketing opportunities for cattle producers.⁵³¹ It should be noted that the last large fed cattle processing plant in Texas opened in the early 1970's.⁵³²

⁵¹⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Justin Benavidez, Ph.D., Texas A&M AgriLife Extension).

⁵¹⁹ *Id.*

⁵²⁰ *Id.*

⁵²¹ *Id.*

⁵²² *Id.*

⁵²³ *Id.*

⁵²⁴ *Id.*

⁵²⁵ "USDA Commits \$215 Million to Enhance the American Food Supply Chain," U.S. Department of Agriculture, February 24, 2022.

⁵²⁶ *Id.*

⁵²⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Dustin Dean, Texas & Southwestern Cattle Raisers Association).

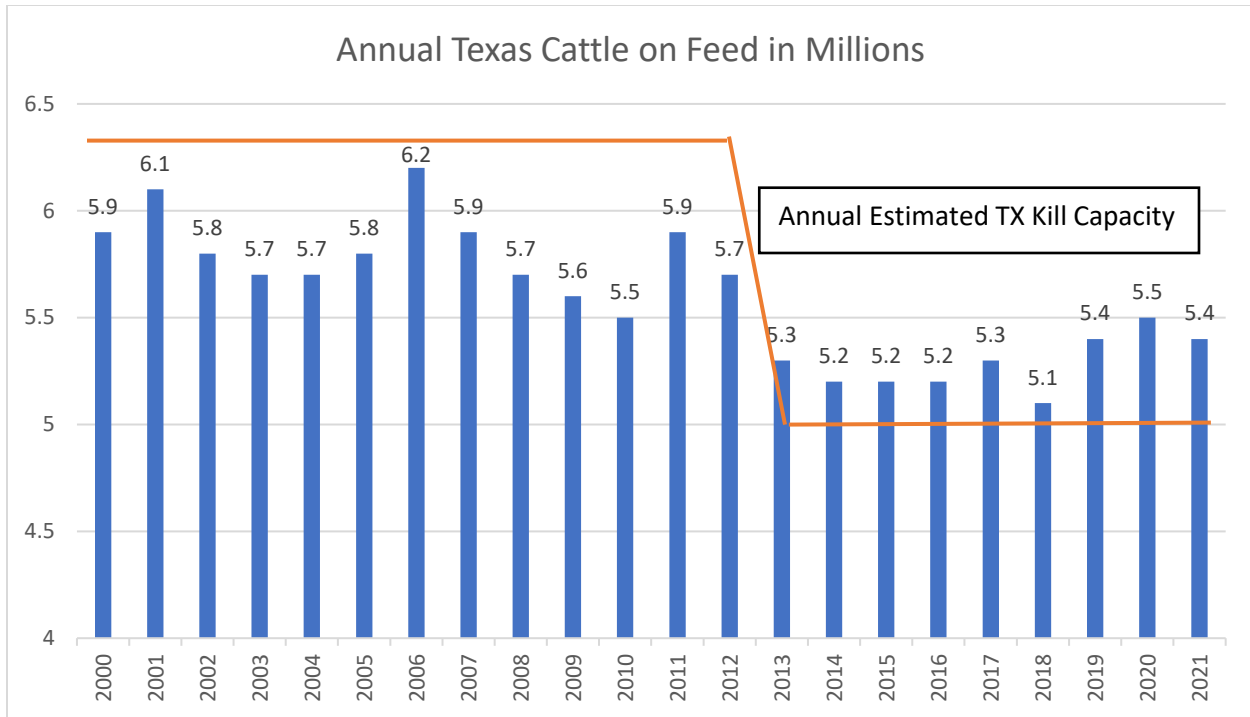
⁵²⁸ *Id.*

⁵²⁹ *Id.*

⁵³⁰ *Id.*

⁵³¹ *Id.*

⁵³² *Id.*



Information provided by Texas Cattle Feeders Association.

The chart above compares the national beef processing capacity (effective 40-Hr capacity) with the fed cattle supply (Wkly Avg Fed Sltr).⁵³³ Fed cattle supplies exceeded processing capacity nationally from 2016 through 2022, and beef processors enjoyed record profits those years while cattle producers experienced minimal profits or significant losses.⁵³⁴ The chart then appears to indicate that processing capacity will exceed fed cattle supplies in 2023.⁵³⁵ However, while cattle inventories are expected to decline in these years as explained in the chart and the processing plant deficit may subside slightly, this chart also includes anticipated construction of new plants in different regions of the country, some of which will be of no benefit to Texas cattle producers and in recent months appear to be losing momentum.⁵³⁶ Fortunately, new packing plants being proposed in Texas remain on track and will be shovel ready in the near future.⁵³⁷ These new plants will also operate at scale and be designed in a manner that allows for future expansion.⁵³⁸

In 2017 J.J. O'Brien Ranch opened with as United States Department of Agriculture Certified Grassfed Producer.⁵³⁹ The J.J. O'Brien Ranch relies on processors and slaughterhouse to process their beef before delivering to their consumers front porch.⁵⁴⁰ During the pandemic the demand to

⁵³³ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Dustin Dean, Texas & Southwestern Cattle Raisers Association).

⁵³⁴ *Id.*

⁵³⁵ *Id.*

⁵³⁶ *Id.*

⁵³⁷ *Id.*

⁵³⁸ *Id.*

⁵³⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by James O'Brien, Owner, J.J. O'Brien Ranch).

⁵⁴⁰ *Id.*

purchase meat directly from livestock producers increased dramatically when supplies in the grocery store decreased.⁵⁴¹ The more options a producer has to process their beef is more sustainable for business.⁵⁴² When there is more competition in livestock it creates a better price for both the consumer and rancher to ensure more affordable food in America.⁵⁴³

The co-founder of Foodshed Investors and owner of two butcher shop restaurants testified on the importance of redundancy and reliability to ensure our food requirements are met and food safety is resilient.⁵⁴⁴ Rural meat packing facilities are an economic driver for rural communities that are built on small to mid-size processing plants in Texas. A facility this size processes between 45 and 80 cattle per week which has the capacity to support two to four counties per region.⁵⁴⁵ This size facility will support six to ten family-owned ranching operations and employ six full-time positions per location.⁵⁴⁶ This would benefit all ranch operations as if there is reliable processing, they can begin to grow their production.⁵⁴⁷

Recommendations

The cattle industry remains one of the cornerstones of the state. Because of this, Texas must continue to support the workforce and producers so that the economic growth in the state continues.

The committee recommends programs which cover the skills required to operate the production at meat packing facilities. Continued partnerships with local high schools and community colleges can succeed in keeping qualified workforce available to companies.

Additionally, the state should develop a system in the state that allows small-scale producers to utilize custom-exempt slaughterhouses throughout Texas.

FFA and other agricultural curricula should be expanded, specifically to urban children in the public schools to give awareness to how food supply meets food demand.

⁵⁴¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by James O'Brien, Owner, J.J. O'Brien Ranch).

⁵⁴² *Id.*

⁵⁴³ *Id.*

⁵⁴⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Jarred Maxwell, Co-founder, Foodshed Investors).

⁵⁴⁵ *Id.*

⁵⁴⁶ *Id.*

⁵⁴⁷ *Id.*

Interim Charge #8

Study the impact of cattle theft on farming and ranching operations throughout Texas and recommend cost-effective measures to mitigate loss and increase security.

Committee Hearing Information

The Committee held a hearing on May 11, 2022, to hear testimony from invited stakeholders and the public on agricultural theft in Texas.

Invited testimony from the following persons:

- Jim Schwertner, President / CEO (self)
- Scott Williamson, Director, Texas & Southwestern Cattle Raisers Association

Background

In March 2021, a Texas Parks and Wildlife game warden contacted Special Ranger Marty Baker to begin an investigation in Loving County of five black stray cattle that were shot and killed.⁵⁴⁸ A confidential party had given the game warden a text message from Loving County Judge Skeet Jones, with a check for \$2,720 from an auction in Oklahoma for two steers and a black cow.⁵⁴⁹ The text message did not identify if the steers were strays, although it referred to one as a wild cow.⁵⁵⁰ After months of failed attempts to round up three bulls and a heifer without markings roaming near the Pecos River in Reeves County, Jones and his ranch hand utilized a helicopter to capture the cattle which were then sold in New Mexico. The money was donated to a boys' ranch in Amarillo.⁵⁵¹

The sting operation began by gaining permission from a landowner to let a brown-reddish cow and calf and black bull with microchips loose on their property.⁵⁵² The cows were captured and were shown at the Big Spring Livestock Auction in Big Spring, Texas.⁵⁵³ The black bull was still on the loose and Judge Jones called the Wheat Ranch foreman asking permission to catch the bull.⁵⁵⁴ At that time, the ranch foreman said "go ahead because that bull is not ours".⁵⁵⁵ Three days later, the ranch foreman saw Judge Jones and learned the bull was going to market.⁵⁵⁶ The Agriculture Code 142: Estrays Section 142.003: Discovery of Estray; Notice states that if an estray without being herded with other livestock, roams about the property of a person without that person's permission or roams about public property, the owner of the private property or the custodian of the public property, as applicable, shall, as soon as reasonably possible, report the presence of the estray to the sheriff of the county in which the estray is discovered.⁵⁵⁷ It is in the jurisdiction of the Sheriff's office to sell, not the person who found it or the property owner of the property on which it was

⁵⁴⁸ "Big trouble in Little Loving County, Texas," J. David Goodman, New York Times, August 25, 2022.

⁵⁴⁹ *Id.*

⁵⁵⁰ *Id.*

⁵⁵¹ *Id.*

⁵⁵² *Id.*

⁵⁵³ *Id.*

⁵⁵⁴ *Id.*

⁵⁵⁵ *Id.*

⁵⁵⁶ *Id.*

⁵⁵⁷ Agriculture Code Chapter 142: Estrays.

found. The party reports it to the sheriff, the sheriff impounds if the owner doesn't remove it. There is no provision that allows an individual who finds livestock on their property to dispose of it themselves or keep it.

In December 2021 Jones was the object of a sting operation and investigation for cattle-rustling.⁵⁵⁸ The investigation and warrants alleged that Jones was cattle-rustling and the sting operation involved a reddish-brown cow, her calf and the black yearling bull all of which were microchipped by the special rangers.⁵⁵⁹ The three felony counts for livestock theft and engaging in organized crime could sentence send Jones to prison for decades.⁵⁶⁰ Jones said that if he or his ranch hands found a stray cow they would sell it at auction and give the proceeds to boys' ranches in Texas.⁵⁶¹

Committee Testimony on Interim Charge #8

Texas and Southwestern Cattle Raisers Association was founded in 1877 to specifically combat cattle theft.⁵⁶² Under the Texas Code of Criminal Procedure, Chapter 2.125 the director of the Department of Public Safety may appoint up to 50 special rangers who are employed by the Texas and Southwestern Cattle Raisers Association to aid law enforcement agencies in the investigation of the theft of livestock or related property.⁵⁶³ The market inspection program is authorized by federal statute and employs sixty-five market inspectors that are present at every livestock sale across Texas.⁵⁶⁴ Cattle, horses, goats, sheep, pigs and exotics are all parties to agricultural theft.⁵⁶⁵ Agricultural operations are eighty-seven percent family run and they are directly impacted when their animals are stolen.⁵⁶⁶ The agricultural operation margins are very narrow and most farm equipment is not insured against theft.⁵⁶⁷

Keith Jones testified that legislation is needed to guarantee restitution to victims of theft following a theft conviction. Keith testified that a 100-horsepower John Deere tractor was stolen in Limestone County that the rightful owner had used to harvest hay for his cattle during the fall and winter months.⁵⁶⁸ In Texas, the average cattle herd size is 30-35 head. Since a cow's productive life cycle is up to 12 years, the theft of a calf could result in \$9,200 loss.⁵⁶⁹ Accordingly, a thief should be sentenced based on total loss caused by the theft, i.e., the loss of future profit to the

⁵⁵⁸ "Big trouble in Little Loving County, Texas," J. David Goodman, New York Times, August 25, 2022.

⁵⁵⁹ *Id.*

⁵⁶⁰ *Id.*

⁵⁶¹ *Id.*

⁵⁶² Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Scott Williamson, Executive Director of Law Enforcement, Brand and Inspection Services, Texas & Southwestern Cattle Raisers Association).

⁵⁶³ Texas Code of Criminal Procedure, Chapter 2.125.

⁵⁶⁴ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Scott Williamson, Executive Director of Law Enforcement, Brand and Inspection Services, Texas & Southwestern Cattle Raisers Association).

⁵⁶⁵ *Id.*

⁵⁶⁶ *Id.*

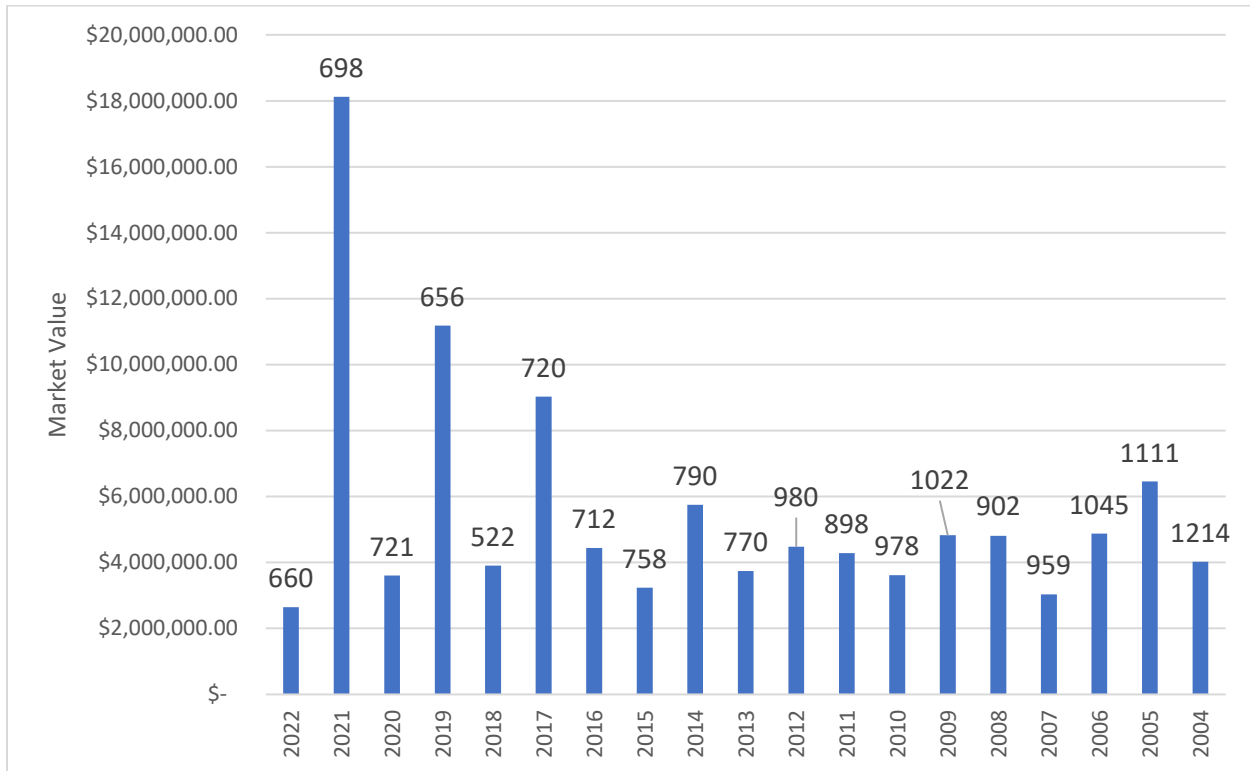
⁵⁶⁷ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Keith Jones).

⁵⁶⁸ *Id.*

⁵⁶⁹ *Id.*

owner as well as the value of the cow.⁵⁷⁰ Jim Schwertner testified that penalties for theft of agricultural pharmaceuticals should be enhanced.⁵⁷¹ Senator Perry said this is a big priority and Mr. Schwertner said the Williamson County District Attorneys support this enhancement.⁵⁷²

Market Value of Cases & Number of Cases Investigated



Information provided by the Texas & Southwestern Cattle Raisers Association.

Recommendations

Cattle theft in the state directly impacts the livelihood of farmers and ranchers in Texas. The officers with the Texas & Southwestern Cattle Raisers Association continue to track and investigate cattle theft crime, however, more on the ground education could benefit those who are impacted the most.

The committee recommends the creation of training for local district attorney's, prosecutors, and judges relative to agricultural crimes, applicable laws, impacts on producers, and how to properly quantify restitution amounts. Training can be delivered by special rangers through certified continuing education institutions.

⁵⁷⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Keith Jones).

⁵⁷¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, May 11, 2022 (testimony provided by Jim Schwertner).

⁵⁷² *Id.*

The state should also consider the implementation of stricter violations for agricultural theft of pharmaceuticals. Producers rely on these drugs to keep their herds healthy and safe. The costs are high, especially in the current high inflation and low supply economy.

Interim Charge #9

Monitor the implementation of legislation addressed by the Senate Committee on Water, Agriculture & Rural Affairs passed by the 87th Legislature, as well as relevant agencies and programs under the committee's jurisdiction. Specifically, make recommendations for any legislation needed to improve, enhance, or complete implementation of the following:

- *Senate Bill 8 (86th Legislature), Relating to state and regional flood planning.*
- *Senate Bill 601 (87th Legislature), Relating to the creation and activities of the Texas Produced Water Consortium.*
- *Senate Bill 905 (87th Legislature), Relating to guidance on the regulations applicable to the potable reuse of wastewater; and*
- *House Bill 3516 (87th Legislature), Relating to the regulation of the recycling of fluid oil and gas waste.*

Committee Hearing Information

The Committee held a hearing on November 16, 2022, to hear testimony from invited stakeholders and the public on the monitoring charges for committee.

Invited testimony from the following persons:

- Reem Zoun, Director, Flood Planning, Office of Planning, Texas Water Development Board
- Rusty Smith, Executive Director, Texas Produced Water Consortium
- Paul Dubois, Assistant Director, Technical Permitting Oil & Gas Division, Railroad Commission of Texas
- Joel Klump, Manager, Plan and Technical Review Section, Water Supply Division, Texas Commission on Environmental Quality

Senate Bill 8

Senate Bill 8, passed by the 86th Legislature in 2019 in response to several years of catastrophic flooding and Hurricane Harvey recovery. The bill established the first State Flood Plan in Texas with an effort led by the Texas Water Development Board (TWDB).⁵⁷³ TWDB was charged with organizing the state into regional flood planning groups comprised of designated representatives from the general public, counties, municipalities, industries, agricultural interests, environmental interests, small businesses, electric generating utilities, river authorities, water districts, and water utilities.⁵⁷⁴

Senate Bill 601

Current water supply relies on rainfall to fill reservoirs and recharge aquifers. While the state has companies using innovative water solutions such as water reuse in the dairy industry or wastewater reuse, a new source of water has yet to be tapped. From seawater and brackish desalination came the opportunity for produced water reuse leading to legislation in 2021. The 87th Legislature passed

⁵⁷³ Tex. S.B. 8, 86 Leg. R.S. (2019).

⁵⁷⁴ *Id.*

Senate Bill 601 which created the Texas Produced Water Consortium (TPWC) at Texas Tech University as a stakeholder driven group charged with solving the excess produced water issue in Texas.⁵⁷⁵ Within the first year, the TPWC was charged with developing a report to answer several questions: how much produced water is available, can it be used for a beneficial use, and what does the state need to do going forward. On September 1, 2022, the consortium released the report detailing months of stakeholder input.

The consortium represents a rare opportunity for Texas to develop new water supply combined with ancillary benefits from reducing oil field injection wells.

Senate Bill 905

In order to provide clear guidance to the 30 direct potable reuse (DPR) projects in the State Water Plan, the 87th Legislature passed SB 905 which directed the Texas Commission on Environmental Quality to develop guidance for DPR projects.⁵⁷⁶ The guidance document will have entities understand the process for such a project prior to application for a permit. This will help the entities in cost and feasibility estimates.⁵⁷⁷

House Bill 3516

House Bill 3516 passed during the 87th Legislative session and directed the Texas Railroad Commission to conduct rulemaking to create a more transparent and predictable permitting process for commercial produced water recycling operations.⁵⁷⁸ There is a growing need for commercial produced water recycling companies to treat the large volumes of oil and gas waste in the state. The bill facilitates a more streamlined and defined process.⁵⁷⁹

Committee Testimony on Interim Charge #9

Reem Zoun with the Texas Water Development Board (TWDB) updated the committee on the status of Senate Bill 8 which creates the first State Flood Plan in Texas.⁵⁸⁰ The TWDB has designated planning areas, created rules, appointed initial planning group members, developed guidelines, and created a data hub and database for planning purposes.⁵⁸¹ Following the public comment period, TWDB created boundaries for each regional flood planning group with 12 members and nine non-voting members.⁵⁸² There are 177 voting and 167 non-voting members that sit on the groups.⁵⁸³

All of the groups have designated sponsors, officers, and technical consultants. The first regional flood plans have been submitted to TWDB and returned to the groups with comments.⁵⁸⁴ All

⁵⁷⁵ Tex. S.B. 601, 87 Leg. R.S., (2021).

⁵⁷⁶ Tex. S.B. 905, 87 Leg. R.S. (2021).

⁵⁷⁷ *Id.*

⁵⁷⁸ Tex. H.B. 3516, 87 Leg., R.S. (2021).

⁵⁷⁹ *Id.*

⁵⁸⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Reem Zoun, Texas Water Development Board).

⁵⁸¹ *Id.*

⁵⁸² *Id.*

⁵⁸³ *Id.*

⁵⁸⁴ *Id.*

together, the regional flood planning groups have hosted over 440 public meetings.⁵⁸⁵ The regional plans are due to TWDB by January 2023 and the final plan is due for publication by September 2024.⁵⁸⁶

Draft plans include 200 mitigation projects totaling more than \$37 billion. There are 2,000 mitigation studies at an estimated \$1.7 billion.⁵⁸⁷ The draft plans have shed light on risk areas and places where buildings are in flood prone areas. As an example, Region 6 has several emergency and medical buildings in high-risk areas and is in the Hurricane Harvey impacted region.⁵⁸⁸

Currently, the regional flood planning groups are holding public meetings to discuss their draft plans and receive comments.⁵⁸⁹

Joel Klump with the Texas Commission Environmental Quality (TCEQ) gave an update on Senate Bill 905 which required the agency to produce a guidance document on the direct potable reuse (DPR) process.⁵⁹⁰ The document covers the different program areas at TCEQ with jurisdiction over the DPR process including wastewater treatment plants, water rights, and drinking water facilities.⁵⁹¹ Additionally, costs, community involvement, and steps to apply are included.⁵⁹²

There is one DPR plant in operation located in Big Spring that was approved in April 2013. The City of Wichita Falls has a plant in operation from 2014-2015. TCEQ is reviewing a DPR application from El Paso Water Utility which has completed a pilot study.⁵⁹³ There have been discussions with other communities following the drought this last summer. Generally, less than ten communities have contacted TCEQ, but the guidance document may help build interest.⁵⁹⁴

One of the advantages of DPR is that the water is treated to potable standards so the entities can use existing infrastructure and don't need to lay new wastewater pipe.⁵⁹⁵

Rusty Smith with the Texas Produced Water Consortium at Texas Tech University explained the implementation of Senate Bill 601 and the findings of the Consortium.⁵⁹⁶ The group brought resources together from the state and the nation to develop beneficial use opportunities from produced water. The findings were published in a report on September 1, 2022.⁵⁹⁷

⁵⁸⁵ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Reem Zoun, Texas Water Development Board).

⁵⁸⁶ *Id.*

⁵⁸⁷ *Id.*

⁵⁸⁸ *Id.*

⁵⁸⁹ *Id.*

⁵⁹⁰ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Joel Klump, Texas Commission on Environmental Quality).

⁵⁹¹ *Id.*

⁵⁹² *Id.*

⁵⁹³ *Id.*

⁵⁹⁴ *Id.*

⁵⁹⁵ *Id.*

⁵⁹⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Rusty Smith, Texas Produced Water Consortium).

⁵⁹⁷ *Id.*

The report was based on the concept that Texas has looming water challenges including a 7 million acre feet shortage in the next 50 years. The Consortium focused their research on the Permian Basin as that is where most of the produced water volume exists.⁵⁹⁸

According to calculations, the Permian Delaware oil production to produced water is 5:1 barrels. In the Permian Delaware Basin, the ratio is closer to 2.6:1. Over 38 years, the consortium estimated that the produced water production would total 14 million barrels per day. Subtracting industry use, the total is closer to 11 million barrels per day or 500,000-515,000 acre feet per year.⁵⁹⁹ Estimated recovery once treated is 250,000-260,000 acre feet per year.⁶⁰⁰

When applying these totals to regional water planning, the produced water can meet the needs of several regions. Region F has a 50-year water need of 80,000 acre feet per year. Similarly, Region E in Far West Texas has a need for 80,000 acre feet per year. Two regions could be completely supplied by produced water.⁶⁰¹

The Consortium looked at different technologies to treat produced water to beneficial use standards. There is a trade off among the varieties. Membrane distillation is cost effective and efficient but not able to handle high salinity water volumes.⁶⁰² Conversely, thermal processes are expensive but yield high quality treated water.⁶⁰³

While the Consortium is still working through the technology combination and economics, it examined current water costs compared to treatment. It generally costs industry \$0.60-0.70 per barrel to dispose of produced water.⁶⁰⁴ The current estimated cost for produced water treatment is \$2.55 per barrel. In Region F, the largest user of water is irrigators, and the cost is \$0.03 per barrel.⁶⁰⁵ While the costs associated with produced water treatment are difficult to reconcile, market forces will drive the value up with water scarcity.⁶⁰⁶

The Consortium compared water supply projects in the region and the cost of the treatment. According to the State Water Plan, Region F will invest between \$0.05-0.20 per barrel for water supply projects.⁶⁰⁷

Senate Bill 601 also required the Consortium to develop pilot projects. Phase 1 would create a pilot to provide proof that produced water can be treated and economically and tested in a controlled environment.⁶⁰⁸ At minimum, there would be a project awarded over the basins once

⁵⁹⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Rusty Smith, Texas Produced Water Consortium).

⁵⁹⁹ *Id.*

⁶⁰⁰ *Id.*

⁶⁰¹ *Id.*

⁶⁰² *Id.*

⁶⁰³ *Id.*

⁶⁰⁴ *Id.*

⁶⁰⁵ *Id.*

⁶⁰⁶ *Id.*

⁶⁰⁷ *Id.*

⁶⁰⁸ *Id.*

the members develop a request for proposal. Second phase would be for innovative technologies for the next generation of produced water treatment for beneficial use.⁶⁰⁹

The Consortium had several policy recommendations including the pilot projects and to continue the organization.⁶¹⁰ The group would also complete a second report by December 1, 2024, with the findings from the pilot projects. The Consortium recommends that TWDB encourage regional water planning groups to consider including produced water in their regional plans. Additionally, TCEQ and TWDB should consider a process for permitting produced water for beneficial use.⁶¹¹

Paul Dubois with the Texas Railroad Commission (RRC) testified on the implementation for House Bill 3516 which is in progress.⁶¹² The RRC staff has prepared draft rules which are being worked on with input from stakeholders. However, over the course of the rule process, RRC staff discovered interaction between implementation still occurring between House Bill 2201 and Senate Bill 1541 from the 85th Legislative Session.⁶¹³ Additionally, RRC staff has recommended substantial changes to the Rule 8 permitting process at the agency which is impacting HB 3516 implementation.⁶¹⁴ Staff estimates a draft rule would come before the Commission in May 2023.⁶¹⁵

Sarah Stogner testified on the implementation of Senate Bill 601. She explained that there is contamination of their groundwater. According to Ms. Stogner, several former oil and gas wells are overflowing and contaminating groundwater on her property.⁶¹⁶ Deep injection causes earthquakes and shallow injection forces old wells to contaminate.⁶¹⁷

Ashley Watt testified on the implementation of Senate Bill 601. Ms. Watt believes that the injection costs is artificially inexpensive as compared to the cleanup costs from abandoned wells.⁶¹⁸ Ms. Watt also believes that the RRC is allowing producers to exceed their injection limits.⁶¹⁹ According to Ms. Watt has lost 2.2 million acre feet in usable water.⁶²⁰

⁶⁰⁹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Rusty Smith, Texas Produced Water Consortium).

⁶¹⁰ *Id.*

⁶¹¹ *Id.*

⁶¹² Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Paul Dubois, Texas Railroad Commission).

⁶¹³ *Id.*

⁶¹⁴ *Id.*

⁶¹⁵ *Id.*

⁶¹⁶ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Sarah Stogner).

⁶¹⁷ *Id.*

⁶¹⁸ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Ashley Watt).

⁶¹⁹ *Id.*

⁶²⁰ *Id.*

Sheila Hemphill testified on the Committee monitoring charge. Ms. Hemphill is requesting funding for a water supply project.⁶²¹ Most ranchers in the area in McCollough County are losing water supply in their wells.⁶²²

Recommendations

The Committee recommends the Legislature continue to fund State Flood Planning at the Texas Water Development Board. There should also be additional appropriations for the Texas Infrastructure Resiliency Fund given that the preliminary plans are already showing a growing need for projects.

The Texas Produced Water Consortium at Texas Tech University should continue in administration as there is more work to be done. The development of pilot projects and adequate testing will continue the quest to find beneficial uses for produced water in the state and reduce the reliance on disposal wells. Additionally, the state should invest in the pilot project administration and lab testing to ensure all scientific protocols are adhered to.

The Texas Railroad Commission's implementation of House Bill 3516 should continue. However, for the work of the Consortium and the water midstream producers to move forward, the RRC must complete the rule making process under HB 3516. The committee recommends the RRC complete the process timely so as not to stymie industry innovation.

⁶²¹ Senate Committee on Water, Agriculture & Rural Affairs Hearing, November 16, 2022 (testimony provided by Sheila Hemphill).

⁶²² *Id.*